

## SEQUENCE LISTING

&lt;110&gt; University of Rochester

Yule, D.I.

Wagner II, Larry

<120> Inositol 1,4,5-trisphosphate receptor  
mutants and uses thereof

&lt;130&gt; 21108.0042P1

&lt;150&gt; 60/539,245

&lt;151&gt; 2004-01-26

&lt;160&gt; 32

&lt;170&gt; FastSEQ for Windows Version 4.0

&lt;210&gt; 1

&lt;211&gt; 2710

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence:/note =  
synthetic construct

&lt;400&gt; 1

Met	Ser	Asp	Lys	Met	Ser	Ser	Phe	Leu	His	Ile	Gly	Asp	Ile	Cys	Ser
1				5				10						15	
Leu	Tyr	Ala	Glu	Gly	Ser	Thr	Asn	Gly	Phe	Ile	Ser	Thr	Leu	Gly	Leu
			20					25					30		
Val	Asp	Asp	Arg	Cys	Val	Val	Gln	Pro	Glu	Ala	Gly	Asp	Leu	Asn	Asn
			35				40					45			
Pro	Pro	Lys	Lys	Phe	Arg	Asp	Cys	Leu	Phe	Lys	Leu	Cys	Pro	Met	Asn
			50			55					60				
Arg	Tyr	Ser	Ala	Gln	Lys	Gln	Phe	Trp	Lys	Ala	Ala	Lys	Pro	Gly	Ala
					70					75				80	
Asn	Ser	Thr	Thr	Asp	Ala	Val	Leu	Leu	Asn	Lys	Leu	His	His	Ala	Ala
				85				90						95	
Asp	Leu	Glu	Lys	Lys	Gln	Asn	Glu	Thr	Glu	Asn	Arg	Lys	Leu	Leu	Gly
			100				105						110		
Thr	Val	Ile	Gln	Tyr	Gly	Asn	Val	Ile	Gln	Leu	Leu	His	Leu	Lys	Ser
			115			120						125			
Asn	Lys	Tyr	Leu	Thr	Val	Asn	Lys	Arg	Leu	Pro	Ala	Leu	Leu	Glu	Lys
			130			135					140				
Asn	Ala	Met	Arg	Val	Thr	Leu	Asp	Glu	Ala	Gly	Asn	Glu	Gly	Ser	Trp
					150				155					160	
Phe	Tyr	Ile	Gln	Pro	Phe	Tyr	Lys	Leu	Arg	Ser	Ile	Gly	Asp	Ser	Val
				165				170						175	
Val	Ile	Gly	Asp	Lys	Val	Val	Leu	Asn	Pro	Val	Asn	Ala	Gly	Gln	Pro
			180				185						190		
Leu	His	Ala	Ser	Ser	His	Gln	Leu	Val	Asp	Asn	Pro	Gly	Cys	Asn	Glu
			195			200					205				
Val	Asn	Ser	Val	Asn	Cys	Asn	Thr	Ser	Trp	Lys	Ile	Val	Leu	Phe	Met
			210			215					220				

Lys 225	Trp	Ser	Asp	Asn	Lys 230	Asp	Asp	Ile	Leu	Lys 235	Gly	Gly	Asp	Val	Val 240
Arg	Leu	Phe	His	Ala 245	Glu	Gln	Glu	Lys	Phe 250	Leu	Thr	Cys	Asp	Glu 255	His
Arg	Lys	Lys	Gln	His 260	Val	Phe	Leu	Arg 265	Thr	Thr	Gly	Arg	Gln 270	Ser	Ala
Thr	Ser	Ala 275	Thr	Ser	Ser	Lys	Ala 280	Leu	Trp	Glu	Val	Glu	Val 285	Val	Gln
His	Asp 290	Pro	Cys	Arg	Gly	Gly 295	Ala	Gly	Tyr	Trp	Asn 300	Ser	Leu	Phe	Arg
Phe 305	Lys	His	Leu	Ala 310	Thr	Gly	His	Tyr	Leu	Ala 315	Ala	Glu	Val	Asp	Pro 320
Asp	Phe	Glu	Glu	Glu 325	Cys	Leu	Glu	Phe	Gln 330	Pro	Ser	Val	Asp	Pro 335	Asp
Gln	Asp	Ala 340	Ser	Arg	Ser	Arg	Leu 345	Arg	Asn	Ala	Gln	Glu	Lys 350	Met	Val
Tyr	Ser	Leu 355	Val	Ser	Val	Pro	Glu 360	Gly	Asn	Asp	Ile	Ser 365	Ser	Ile	Phe
Glu	Leu 370	Asp	Pro	Thr	Thr	Leu 375	Arg	Gly	Gly	Asp 380	Ser	Leu	Val	Pro	Arg
Asn 385	Ser	Tyr	Val	Arg	Leu 390	Arg	His	Leu	Cys	Thr 395	Asn	Thr	Trp	Val	His 400
Ser	Thr	Asn	Ile 405	Pro	Ile	Asp	Lys	Glu	Glu 410	Gly	Lys	Pro	Val	Met 415	Leu
Lys	Ile	Gly	Thr 420	Ser	Pro	Leu	Lys	Glu 425	Asp	Lys	Glu	Ala 430	Phe	Ala	Ile
Val	Pro 435	Val	Ser	Pro	Ala	Glu	Val 440	Arg	Asp	Leu	Asp	Phe 445	Ala	Asn	Asp
Ala	Ser 450	Lys	Val	Leu	Gly	Ser 455	Ile	Ala	Gly	Lys	Leu 460	Glu	Lys	Gly	Thr
Ile 465	Thr	Gln	Asn	Glu 470	Arg	Arg	Ser	Val	Thr	Lys 475	Leu	Leu	Glu	Asp	Leu 480
Val	Tyr	Phe	Val 485	Thr	Gly	Gly	Thr	Asn 490	Ser	Gly	Gln	Asp	Val	Leu 495	Glu
Val	Val	Phe 500	Ser	Lys	Pro	Asn	Arg 505	Glu	Arg	Gln	Lys	Leu 510	Met	Arg	Glu
Gln	Asn 515	Ile	Leu	Lys	Gln	Ile	Phe 520	Lys	Leu	Leu	Gln 525	Ala	Pro	Phe	Thr
Asp 530	Cys	Gly	Asp	Gly	Pro	Met 535	Leu	Arg	Leu	Glu 540	Glu	Leu	Gly	Asp	Gln
Arg 545	His	Ala	Pro	Phe	Arg 550	His	Ile	Cys	Arg	Leu 555	Cys	Tyr	Arg	Val	Leu 560
Arg	His	Ser	Gln	Gln 565	Asp	Tyr	Arg	Lys	Asn 570	Gln	Glu	Tyr	Ile	Ala 575	Lys
Gln	Phe	Gly	Phe 580	Met	Gln	Lys	Gln 585	Ile	Gly	Tyr	Asp	Val 590	Leu	Ala	Glu
Asp	Thr 595	Ile	Thr	Ala	Leu	Leu	His 600	Asn	Asn	Arg	Lys 605	Leu	Leu	Glu	Lys
His 610	Ile	Thr	Ala	Ala	Glu	Ile 615	Asp	Thr	Phe	Val 620	Ser	Leu	Val	Arg	Lys
Asn 625	Arg	Glu	Pro	Arg	Phe 630	Leu	Asp	Tyr	Leu	Ser 635	Asp	Leu	Cys	Val	Ser 640
Met	Asn	Lys	Ser 645	Ile	Pro	Val	Thr	Gln	Glu 650	Leu	Ile	Cys	Lys	Ala 655	Val
Leu	Asn	Pro	Thr 660	Asn	Ala	Asp	Ile 665	Leu	Ile	Glu	Thr	Lys 670	Leu	Val	Leu
Ser	Arg 675	Phe	Glu	Phe	Glu	Gly	Val 680	Ser	Thr	Gly	Glu 685	Asn	Ala	Leu	Glu
Ala	Gly 690	Glu	Asp	Glu	Glu	Glu 695	Val	Trp	Leu	Phe 700	Trp	Arg	Asp	Ser	Asn

Lys	Glu	Ile	Arg	Ser	Lys	Ser	Val	Arg	Glu	Leu	Ala	Gln	Asp	Ala	Lys	705	710	715	720
Glu	Gly	Gln	Lys	Glu	Asp	Arg	Asp	Val	Leu	Ser	Tyr	Tyr	Arg	Tyr	Gln	725	730	735	
Leu	Asn	Leu	Phe	Ala	Arg	Met	Cys	Leu	Asp	Arg	Gln	Tyr	Leu	Ala	Ile	740	745	750	
Asn	Glu	Ile	Ser	Gly	Gln	Leu	Asp	Val	Asp	Leu	Ile	Leu	Arg	Cys	Met	755	760	765	
Ser	Asp	Glu	Asn	Leu	Pro	Tyr	Asp	Leu	Arg	Ala	Ser	Phe	Cys	Arg	Leu	770	775	780	
Met	Leu	His	Met	His	Val	Asp	Arg	Asp	Pro	Gln	Glu	Gln	Val	Thr	Pro	785	790	795	800
Val	Lys	Tyr	Ala	Arg	Leu	Trp	Ser	Glu	Ile	Pro	Ser	Glu	Ile	Ala	Ile	805	810	815	
Asp	Asp	Tyr	Asp	Ser	Ser	Gly	Ala	Ser	Lys	Asp	Glu	Ile	Lys	Glu	Arg	820	825	830	
Phe	Ala	Gln	Thr	Met	Glu	Phe	Val	Glu	Glu	Tyr	Leu	Arg	Asp	Val	Val	835	840	845	
Cys	Gln	Arg	Phe	Pro	Phe	Ser	Asp	Lys	Glu	Lys	Asn	Lys	Leu	Thr	Phe	850	855	860	
Glu	Val	Val	Asn	Leu	Ala	Arg	Asn	Leu	Ile	Tyr	Phe	Gly	Phe	Tyr	Asn	865	870	875	880
Phe	Ser	Asp	Leu	Leu	Arg	Leu	Thr	Lys	Ile	Leu	Leu	Ala	Ile	Leu	Asp	885	890	895	
Cys	Val	His	Val	Thr	Thr	Ile	Phe	Pro	Ile	Ser	Lys	Met	Thr	Lys	Gly	900	905	910	
Glu	Glu	Asn	Lys	Gly	Ser	Asn	Val	Met	Arg	Ser	Ile	His	Gly	Val	Gly	915	920	925	
Glu	Leu	Met	Thr	Gln	Val	Val	Leu	Arg	Gly	Gly	Gly	Phe	Leu	Pro	Met	930	935	940	
Thr	Pro	Met	Ala	Ala	Ala	Pro	Glu	Gly	Asn	Val	Lys	Gln	Ala	Glu	Pro	945	950	955	960
Glu	Lys	Glu	Asp	Ile	Met	Val	Met	Asp	Thr	Lys	Leu	Lys	Ile	Ile	Glu	965	970	975	
Ile	Leu	Gln	Phe	Ile	Leu	Asn	Val	Arg	Leu	Asp	Tyr	Arg	Ile	Ser	Cys	980	985	990	
Leu	Leu	Cys	Ile	Phe	Lys	Arg	Glu	Phe	Asp	Glu	Ser	Asn	Ser	Gln	Ser	995	1000	1005	
Ser	Glu	Thr	Ser	Ser	Gly	Asn	Ser	Ser	Gln	Glu	Gly	Pro	Ser	Asn	Val	1010	1015	1020	
Pro	Gly	Ala	Leu	Asp	Phe	Glu	His	Ile	Glu	Glu	Gln	Ala	Glu	Gly	Ile	1025	1030	1035	1040
Phe	Gly	Gly	Ser	Glu	Glu	Asn	Thr	Pro	Leu	Asp	Leu	Asp	Asp	His	Gly	1045	1050	1055	
Gly	Arg	Thr	Phe	Leu	Arg	Val	Leu	Leu	His	Leu	Thr	Met	His	Asp	Tyr	1060	1065	1070	
Pro	Pro	Leu	Val	Ser	Gly	Ala	Leu	Gln	Leu	Leu	Phe	Arg	His	Phe	Ser	1075	1080	1085	
Gln	Arg	Gln	Glu	Val	Leu	Gln	Ala	Phe	Lys	Gln	Val	Gln	Leu	Leu	Val	1090	1095	1100	
Thr	Ser	Gln	Asp	Val	Asp	Asn	Tyr	Lys	Gln	Ile	Lys	Gln	Asp	Leu	Asp	1105	1110	1115	1120
Gln	Leu	Arg	Ser	Ile	Val	Glu	Lys	Ser	Glu	Leu	Trp	Val	Tyr	Lys	Gly	1125	1130	1135	
Gln	Gly	Pro	Asp	Glu	Pro	Met	Asp	Gly	Ala	Ser	Gly	Glu	Asn	Glu	His	1140	1145	1150	
Lys	Lys	Thr	Glu	Glu	Gly	Thr	Ser	Lys	Pro	Leu	Lys	His	Glu	Ser	Thr	1155	1160	1165	
Ser	Ser	Tyr	Asn	Tyr	Arg	Val	Val	Lys	Glu	Ile	Leu	Ile	Arg	Leu	Ser	1170	1175	1180	

Lys Leu Cys Val Gln Glu Ser Ala Ser Val Arg Lys Ser Arg Lys Gln  
 1185 1190 1195 1200  
 Gln Gln Arg Leu Leu Arg Asn Met Gly Ala His Ala Val Val Leu Glu  
 1205 1210 1215  
 Leu Leu Gln Ile Pro Tyr Glu Lys Ala Glu Asp Thr Lys Met Gln Glu  
 1220 1225 1230  
 Ile Met Arg Leu Ala His Glu Phe Leu Gln Asn Phe Cys Ala Gly Asn  
 1235 1240 1245  
 Gln Gln Asn Gln Ala Leu Leu His Lys His Ile Asn Leu Phe Leu Asn  
 1250 1255 1260  
 Pro Gly Ile Leu Glu Ala Val Thr Met Gln His Ile Phe Met Asn Asn  
 1265 1270 1275 1280  
 Phe Gln Leu Cys Ser Glu Ile Asn Glu Arg Val Val Gln His Phe Val  
 1285 1290 1295  
 His Cys Ile Glu Thr His Gly Arg Asn Val Gln Tyr Ile Lys Phe Leu  
 1300 1305 1310  
 Gln Thr Ile Val Lys Ala Glu Gly Lys Phe Ile Lys Lys Cys Gln Asp  
 1315 1320 1325  
 Met Val Met Ala Glu Leu Val Asn Ser Gly Glu Asp Val Leu Val Phe  
 1330 1335 1340  
 Tyr Asn Asp Arg Ala Ser Phe Gln Thr Leu Ile Gln Met Met Arg Ser  
 1345 1350 1355 1360  
 Glu Arg Asp Arg Met Asp Glu Asn Ser Pro Leu Phe Met Tyr His Ile  
 1365 1370 1375  
 His Leu Val Glu Leu Leu Ala Val Cys Thr Glu Gly Lys Asn Val Tyr  
 1380 1385 1390  
 Thr Glu Ile Lys Cys Asn Ser Leu Leu Pro Leu Asp Asp Ile Val Arg  
 1395 1400 1405  
 Val Val Thr His Glu Asp Cys Ile Pro Glu Val Lys Ile Ala Tyr Ile  
 1410 1415 1420  
 Asn Phe Leu Asn His Cys Tyr Val Asp Thr Glu Val Glu Met Lys Glu  
 1425 1430 1435 1440  
 Ile Tyr Thr Ser Asn His Met Trp Lys Leu Phe Glu Asn Phe Leu Val  
 1445 1450 1455  
 Asp Ile Cys Arg Ala Cys Asn Asn Thr Ser Asp Arg Lys His Ala Asp  
 1460 1465 1470  
 Ser Val Leu Glu Lys Tyr Val Thr Glu Ile Val Met Ser Ile Val Thr  
 1475 1480 1485  
 Thr Phe Phe Ser Ser Pro Phe Ser Asp Gln Ser Thr Thr Leu Gln Thr  
 1490 1495 1500  
 Arg Gln Pro Val Phe Val Gln Leu Leu Gln Gly Val Phe Arg Val Tyr  
 1505 1510 1515 1520  
 His Cys Asn Trp Leu Met Pro Ser Gln Lys Ala Ser Val Glu Ser Cys  
 1525 1530 1535  
 Ile Arg Val Leu Ser Asp Val Ala Lys Ser Arg Ala Ile Ala Ile Pro  
 1540 1545 1550  
 Val Asp Leu Asp Ser Gln Val Asn Asn Leu Phe Leu Lys Ser His Asn  
 1555 1560 1565  
 Ile Val Gln Lys Thr Ala Met Asn Trp Arg Leu Ser Ala Arg Asn Ala  
 1570 1575 1580  
 Ala Arg Arg Asp Glu Val Leu Ala Ala Ser Arg Asp Tyr Arg Asn Ile  
 1585 1590 1595 1600  
 Ile Glu Arg Leu Gln Asp Ile Val Ser Ala Leu Glu Asp Arg Leu Arg  
 1605 1610 1615  
 Pro Leu Val Gln Ala Glu Leu Ser Val Leu Val Asp Val Leu His Arg  
 1620 1625 1630  
 Pro Glu Leu Leu Phe Pro Glu Asn Thr Asp Ala Arg Arg Lys Cys Glu  
 1635 1640 1645  
 Ser Gly Gly Phe Ile Cys Lys Leu Ile Lys His Thr Lys Gln Leu Leu  
 1650 1655 1660

Glu Glu Asn Glu Glu Lys Leu Cys Ile Lys Val Leu Gln Thr Leu Arg  
 1665 1670 1675 1680  
 Glu Met Met Thr Lys Asp Arg Gly Tyr Gly Glu Lys Gly Glu Ala Leu  
 1685 1690 1695  
 Arg Gln Ile Leu Val Asn Arg Tyr Tyr Gly Asn Ile Arg Pro Ser Gly  
 1700 1705 1710  
 Arg Arg Glu Ser Leu Thr Ser Phe Gly Asn Gly Pro Leu Ser Pro Gly  
 1715 1720 1725  
 Gly Pro Ser Lys Pro Gly Gly Gly Gly Gly Pro Gly Ser Gly Ser  
 1730 1735 1740  
 Thr Ser Arg Gly Glu Met Ser Leu Ala Glu Val Gln Cys His Leu Asp  
 1745 1750 1755 1760  
 Lys Glu Gly Ala Ser Asn Leu Val Ile Asp Leu Ile Met Asn Ala Ser  
 1765 1770 1775  
 Ser Asp Arg Val Phe His Glu Ser Ile Leu Leu Ala Ile Ala Leu Leu  
 1780 1785 1790  
 Glu Gly Gly Asn Thr Thr Ile Gln His Ser Phe Phe Cys Arg Leu Thr  
 1795 1800 1805  
 Glu Asp Lys Lys Ser Glu Lys Phe Phe Lys Val Phe Tyr Asp Arg Met  
 1810 1815 1820  
 Lys Val Ala Gln Gln Glu Ile Lys Ala Thr Val Thr Val Asn Thr Ser  
 1825 1830 1835 1840  
 Asp Leu Gly Asn Lys Lys Lys Asp Asp Glu Val Asp Arg Asp Ala Pro  
 1845 1850 1855  
 Ser Arg Lys Lys Ala Lys Glu Pro Thr Thr Gln Ile Thr Glu Glu Val  
 1860 1865 1870  
 Arg Asp Gln Leu Leu Glu Ala Ser Ala Ala Thr Arg Lys Ala Phe Thr  
 1875 1880 1885  
 Thr Phe Arg Arg Glu Ala Asp Pro Asp Asp His Tyr Gln Ser Gly Glu  
 1890 1895 1900  
 Gly Thr Gln Ala Thr Thr Asp Lys Ala Lys Asp Asp Leu Glu Met Ser  
 1905 1910 1915 1920  
 Ala Val Ile Thr Ile Met Gln Pro Ile Leu Arg Phe Leu Gln Leu Leu  
 1925 1930 1935  
 Cys Glu Asn His Asn Arg Asp Leu Gln Asn Phe Leu Arg Cys Gln Asn  
 1940 1945 1950  
 Asn Lys Thr Asn Tyr Asn Leu Val Cys Glu Thr Leu Gln Phe Leu Asp  
 1955 1960 1965  
 Cys Ile Cys Gly Ser Thr Thr Gly Gly Leu Gly Leu Leu Gly Leu Tyr  
 1970 1975 1980  
 Ile Asn Glu Lys Asn Val Ala Leu Ile Asn Gln Thr Leu Glu Ser Leu  
 1985 1990 1995 2000  
 Thr Glu Tyr Cys Gln Gly Pro Cys His Glu Asn Gln Asn Cys Ile Ala  
 2005 2010 2015  
 Thr His Glu Ser Asn Gly Ile Asp Ile Ile Thr Ala Leu Ile Leu Asn  
 2020 2025 2030  
 Asp Ile Asn Pro Leu Gly Lys Lys Arg Met Asp Leu Val Leu Glu Leu  
 2035 2040 2045  
 Lys Asn Asn Ala Ser Lys Leu Leu Leu Ala Ile Met Glu Ser Arg His  
 2050 2055 2060  
 Asp Ser Glu Asn Ala Glu Arg Ile Leu Tyr Asn Met Arg Pro Lys Glu  
 2065 2070 2075 2080  
 Leu Val Glu Val Ile Lys Lys Ala Tyr Met Gln Gly Glu Val Glu Phe  
 2085 2090 2095  
 Glu Asp Gly Glu Asn Gly Glu Asp Gly Ala Ala Ser Pro Arg Asn Val  
 2100 2105 2110  
 Gly His Asn Ile Tyr Ile Leu Ala His Gln Leu Ala Arg His Asn Lys  
 2115 2120 2125  
 Glu Leu Gln Thr Met Leu Lys Pro Gly Gly Gln Val Asp Gly Asp Glu  
 2130 2135 2140

Ala Leu Glu Phe Tyr Ala Lys His Thr Ala Gln Ile Glu Ile Val Arg  
 2145 2150 2155 2160  
 Leu Asp Arg Thr Met Glu Gln Ile Val Phe Pro Val Pro Ser Ile Cys  
 2165 2170 2175  
 Glu Phe Leu Thr Lys Glu Ser Lys Leu Arg Ile Tyr Tyr Thr Thr Glu  
 2180 2185 2190  
 Arg Asp Glu Gln Gly Ser Lys Ile Asn Asp Phe Phe Leu Arg Ser Glu  
 2195 2200 2205  
 Asp Leu Phe Asn Glu Met Asn Trp Gln Lys Lys Leu Arg Ala Gln Pro  
 2210 2215 2220  
 Val Leu Tyr Trp Cys Ala Arg Asn Met Ser Phe Trp Ser Ser Ile Ser  
 2225 2230 2235 2240  
 Phe Asn Leu Ala Val Leu Met Asn Leu Leu Val Ala Phe Phe Tyr Pro  
 2245 2250 2255  
 Phe Lys Gly Val Arg Gly Gly Thr Leu Glu Pro His Trp Ser Gly Leu  
 2260 2265 2270  
 Leu Trp Thr Ala Met Leu Ile Ser Leu Ala Ile Val Ile Ala Leu Pro  
 2275 2280 2285  
 Lys Pro His Gly Ile Arg Ala Leu Ile Ala Ser Thr Ile Leu Arg Leu  
 2290 2295 2300  
 Ile Phe Ser Val Gly Leu Gln Pro Thr Leu Phe Leu Leu Gly Ala Phe  
 2305 2310 2315 2320  
 Asn Val Cys Asn Lys Ile Ile Phe Leu Met Ser Phe Val Gly Asn Cys  
 2325 2330 2335  
 Gly Thr Phe Thr Arg Gly Tyr Arg Ala Met Val Leu Asp Val Glu Phe  
 2340 2345 2350  
 Leu Tyr His Leu Leu Tyr Leu Leu Ile Cys Ala Met Gly Leu Phe Val  
 2355 2360 2365  
 His Glu Phe Phe Tyr Ser Leu Leu Leu Phe Asp Leu Val Tyr Arg Glu  
 2370 2375 2380  
 Glu Thr Leu Leu Asn Val Ile Lys Ser Val Thr Arg Asn Gly Arg Pro  
 2385 2390 2395 2400  
 Ile Ile Leu Thr Ala Ala Leu Ala Leu Ile Leu Val Tyr Leu Phe Ser  
 2405 2410 2415  
 Ile Val Gly Tyr Leu Phe Phe Lys Asp Asp Phe Ile Leu Glu Val Asp  
 2420 2425 2430  
 Arg Leu Pro Asn Glu Thr Ala Gly Pro Glu Thr Gly Glu Ser Leu Ala  
 2435 2440 2445  
 Asn Asp Phe Leu Tyr Ser Asp Val Cys Arg Val Glu Thr Gly Glu Asn  
 2450 2455 2460  
 Cys Thr Ser Pro Ala Pro Lys Glu Glu Leu Leu Pro Val Glu Glu Thr  
 2465 2470 2475 2480  
 Glu Gln Asp Lys Glu His Thr Cys Glu Thr Leu Leu Met Cys Ile Val  
 2485 2490 2495  
 Thr Val Leu Ser His Gly Leu Arg Ser Gly Gly Gly Val Gly Asp Val  
 2500 2505 2510  
 Leu Arg Lys Pro Ser Lys Glu Glu Pro Leu Phe Ala Ala Arg Val Ile  
 2515 2520 2525  
 Tyr Asp Leu Leu Phe Phe Phe Met Val Ile Ile Ile Val Leu Asn Leu  
 2530 2535 2540  
 Ile Phe Gly Val Ile Ile Asp Thr Phe Ala Asp Leu Arg Ser Glu Lys  
 2545 2550 2555 2560  
 Gln Lys Lys Glu Glu Ile Leu Lys Thr Thr Cys Phe Ile Cys Gly Leu  
 2565 2570 2575  
 Glu Arg Asp Lys Phe Asp Asn Lys Thr Val Thr Phe Glu Glu His Ile  
 2580 2585 2590  
 Lys Glu Glu His Asn Met Trp His Tyr Leu Cys Phe Ile Val Leu Val  
 2595 2600 2605  
 Lys Val Lys Asp Ser Thr Glu Tyr Thr Gly Pro Glu Ser Tyr Val Ala  
 2610 2615 2620

Glu Met Ile Arg Glu Arg Asn Leu Asp Trp Phe Pro Arg Met Arg Ala  
 2625 2630 2635 2640  
 Met Ser Leu Val Ser Ser Asp Ser Glu Gly Glu Gln Asn Glu Leu Arg  
 2645 2650 2655  
 Asn Leu Gln Glu Lys Leu Glu Ser Thr Met Lys Leu Val Thr Asn Leu  
 2660 2665 2670  
 Ser Gly Gln Leu Ser Glu Leu Lys Asp Gln Met Thr Glu Gln Arg Lys  
 2675 2680 2685  
 Gln Lys Gln Arg Ile Gly Leu Leu Gly His Pro Pro His Met Asn Val  
 2690 2695 2700  
 Asn Pro Gln Gln Pro Ala  
 2705 2710

<210> 2

<211> 2749

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =  
synthetic construct

<400> 2

Met Ser Asp Lys Met Ser Ser Phe Leu His Ile Gly Asp Ile Cys Ser  
 1 5 10 15  
 Leu Tyr Ala Glu Gly Ser Thr Asn Gly Phe Ile Ser Thr Leu Gly Leu  
 20 25 30  
 Val Asp Asp Arg Cys Val Val Gln Pro Glu Ala Gly Asp Leu Asn Asn  
 35 40 45  
 Pro Pro Lys Lys Phe Arg Asp Cys Leu Phe Lys Leu Cys Pro Met Asn  
 50 55 60  
 Arg Tyr Ser Ala Gln Lys Gln Phe Trp Lys Ala Ala Lys Pro Gly Ala  
 65 70 75 80  
 Asn Ser Thr Thr Asp Ala Val Leu Leu Asn Lys Leu His His Ala Ala  
 85 90 95  
 Asp Leu Glu Lys Lys Gln Asn Glu Thr Glu Asn Arg Lys Leu Leu Gly  
 100 105 110  
 Thr Val Ile Gln Tyr Gly Asn Val Ile Gln Leu Leu His Leu Lys Ser  
 115 120 125  
 Asn Lys Tyr Leu Thr Val Asn Lys Arg Leu Pro Ala Leu Leu Glu Lys  
 130 135 140  
 Asn Ala Met Arg Val Thr Leu Asp Glu Ala Gly Asn Glu Gly Ser Trp  
 145 150 155 160  
 Phe Tyr Ile Gln Pro Phe Tyr Lys Leu Arg Ser Ile Gly Asp Ser Val  
 165 170 175  
 Val Ile Gly Asp Lys Val Val Leu Asn Pro Val Asn Ala Gly Gln Pro  
 180 185 190  
 Leu His Ala Ser Ser His Gln Leu Val Asp Asn Pro Gly Cys Asn Glu  
 195 200 205  
 Val Asn Ser Val Asn Cys Asn Thr Ser Trp Lys Ile Val Leu Phe Met  
 210 215 220  
 Lys Trp Ser Asp Asn Lys Asp Asp Ile Leu Lys Gly Gly Asp Val Val  
 225 230 235 240  
 Arg Leu Phe His Ala Glu Gln Glu Lys Phe Leu Thr Cys Asp Glu His  
 245 250 255  
 Arg Lys Lys Gln His Val Phe Leu Arg Thr Thr Gly Arg Gln Ser Ala  
 260 265 270  
 Thr Ser Ala Thr Ser Ser Lys Ala Leu Trp Glu Val Glu Val Val Gln  
 275 280 285

His	Asp	Pro	Cys	Arg	Gly	Gly	Ala	Gly	Tyr	Trp	Asn	Ser	Leu	Phe	Arg	290	295	300
Phe	Lys	His	Leu	Ala	Thr	Gly	His	Tyr	Leu	Ala	Ala	Glu	Val	Asp	Pro	305	310	315
Asp	Phe	Glu	Glu	Glu	Cys	Leu	Glu	Phe	Gln	Pro	Ser	Val	Asp	Pro	Asp	325	330	335
Gln	Asp	Ala	Ser	Arg	Ser	Arg	Leu	Arg	Asn	Ala	Gln	Glu	Lys	Met	Val	340	345	350
Tyr	Ser	Leu	Val	Ser	Val	Pro	Glu	Gly	Asn	Asp	Ile	Ser	Ser	Ile	Phe	355	360	365
Glu	Leu	Asp	Pro	Thr	Thr	Leu	Arg	Gly	Gly	Asp	Ser	Leu	Val	Pro	Arg	370	375	380
Asn	Ser	Tyr	Val	Arg	Leu	Arg	His	Leu	Cys	Thr	Asn	Thr	Trp	Val	His	385	390	395
Ser	Thr	Asn	Ile	Pro	Ile	Asp	Lys	Glu	Glu	Glu	Lys	Pro	Val	Met	Leu	405	410	415
Lys	Ile	Gly	Thr	Ser	Pro	Leu	Lys	Glu	Asp	Lys	Glu	Ala	Phe	Ala	Ile	420	425	430
Val	Pro	Val	Ser	Pro	Ala	Glu	Val	Arg	Asp	Leu	Asp	Phe	Ala	Asn	Asp	435	440	445
Ala	Ser	Lys	Val	Leu	Gly	Ser	Ile	Ala	Gly	Lys	Leu	Glu	Lys	Gly	Thr	450	455	460
Ile	Thr	Gln	Asn	Glu	Arg	Arg	Ser	Val	Thr	Lys	Leu	Leu	Glu	Asp	Leu	465	470	475
Val	Tyr	Phe	Val	Thr	Gly	Gly	Thr	Asn	Ser	Gly	Gln	Asp	Val	Leu	Glu	485	490	495
Val	Val	Phe	Ser	Lys	Pro	Asn	Arg	Glu	Arg	Gln	Lys	Leu	Met	Arg	Glu	500	505	510
Gln	Asn	Ile	Leu	Lys	Gln	Ile	Phe	Lys	Leu	Leu	Gln	Ala	Pro	Phe	Thr	515	520	525
Asp	Cys	Gly	Asp	Gly	Pro	Met	Leu	Arg	Leu	Glu	Glu	Leu	Gly	Asp	Gln	530	535	540
Arg	His	Ala	Pro	Phe	Arg	His	Ile	Cys	Arg	Leu	Cys	Tyr	Arg	Val	Leu	545	550	555
Arg	His	Ser	Gln	Gln	Asp	Tyr	Arg	Lys	Asn	Gln	Glu	Tyr	Ile	Ala	Lys	565	570	575
Gln	Phe	Gly	Phe	Met	Gln	Lys	Gln	Ile	Gly	Tyr	Asp	Val	Leu	Ala	Glu	580	585	590
Asp	Thr	Ile	Thr	Ala	Leu	Leu	His	Asn	Asn	Arg	Lys	Leu	Leu	Glu	Lys	595	600	605
His	Ile	Thr	Ala	Ala	Glu	Ile	Asp	Thr	Phe	Val	Ser	Leu	Val	Arg	Lys	610	615	620
Asn	Arg	Glu	Pro	Arg	Phe	Leu	Asp	Tyr	Leu	Ser	Asp	Leu	Cys	Val	Ser	625	630	635
Met	Asn	Lys	Ser	Ile	Pro	Val	Thr	Gln	Glu	Leu	Ile	Cys	Lys	Ala	Val	645	650	655
Leu	Asn	Pro	Thr	Asn	Ala	Asp	Ile	Leu	Ile	Glu	Thr	Lys	Leu	Val	Leu	660	665	670
Ser	Arg	Phe	Glu	Phe	Glu	Gly	Val	Ser	Thr	Gly	Glu	Asn	Ala	Leu	Glu	675	680	685
Ala	Gly	Glu	Asp	Glu	Glu	Glu	Val	Trp	Leu	Phe	Trp	Arg	Asp	Ser	Asn	690	695	700
Lys	Glu	Ile	Arg	Ser	Lys	Ser	Val	Arg	Glu	Leu	Ala	Gln	Asp	Ala	Lys	705	710	715
Glu	Gly	Gln	Lys	Glu	Asp	Arg	Asp	Val	Leu	Ser	Tyr	Tyr	Arg	Tyr	Gln	725	730	735
Leu	Asn	Leu	Phe	Ala	Arg	Met	Cys	Leu	Asp	Arg	Gln	Tyr	Leu	Ala	Ile	740	745	750
Asn	Glu	Ile	Ser	Gly	Gln	Leu	Asp	Val	Asp	Leu	Ile	Leu	Arg	Cys	Met	755	760	765



Ser	Asp	Glu	Asn	Leu	Pro	Tyr	Asp	Leu	Arg	Ala	Ser	Phe	Cys	Arg	Leu
770						775					780				
Met	Leu	His	Met	His	Val	Asp	Arg	Asp	Pro	Gln	Glu	Gln	Val	Thr	Pro
785					790					795					800
Val	Lys	Tyr	Ala	Arg	Leu	Trp	Ser	Glu	Ile	Pro	Ser	Glu	Ile	Ala	Ile
				805					810					815	
Asp	Asp	Tyr	Asp	Ser	Ser	Gly	Ala	Ser	Lys	Asp	Glu	Ile	Lys	Glu	Arg
			820					825					830		
Phe	Ala	Gln	Thr	Met	Glu	Phe	Val	Glu	Glu	Tyr	Leu	Arg	Asp	Val	Val
		835					840					845			
Cys	Gln	Arg	Phe	Pro	Phe	Ser	Asp	Lys	Glu	Lys	Asn	Lys	Leu	Thr	Phe
850						855					860				
Glu	Val	Val	Asn	Leu	Ala	Arg	Asn	Leu	Ile	Tyr	Phe	Gly	Phe	Tyr	Asn
865					870					875					880
Phe	Ser	Asp	Leu	Leu	Arg	Leu	Thr	Lys	Ile	Leu	Leu	Ala	Ile	Leu	Asp
				885					890					895	
Cys	Val	His	Val	Thr	Thr	Ile	Phe	Pro	Ile	Ser	Lys	Met	Thr	Lys	Gly
			900					905					910		
Glu	Glu	Asn	Lys	Gly	Ser	Asn	Val	Met	Arg	Ser	Ile	His	Gly	Val	Gly
		915					920					925			
Glu	Leu	Met	Thr	Gln	Val	Val	Leu	Arg	Gly	Gly	Gly	Phe	Leu	Pro	Met
	930					935					940				
Thr	Pro	Met	Ala	Ala	Ala	Pro	Glu	Gly	Asn	Val	Lys	Gln	Ala	Glu	Pro
945					950					955					960
Glu	Lys	Glu	Asp	Ile	Met	Val	Met	Asp	Thr	Lys	Leu	Lys	Ile	Ile	Glu
			965						970					975	
Ile	Leu	Gln	Phe	Ile	Leu	Asn	Val	Arg	Leu	Asp	Tyr	Arg	Ile	Ser	Cys
		980					985						990		
Leu	Leu	Cys	Ile	Phe	Lys	Arg	Glu	Phe	Asp	Glu	Ser	Asn	Ser	Gln	Ser
		995					1000					1005			
Ser	Glu	Thr	Ser	Ser	Gly	Asn	Ser	Ser	Gln	Glu	Gly	Pro	Ser	Asn	Val
1010						1015					1020				
Pro	Gly	Ala	Leu	Asp	Phe	Glu	His	Ile	Glu	Glu	Gln	Ala	Glu	Gly	Ile
1025					1030					1035					1040
Phe	Gly	Gly	Ser	Glu	Glu	Asn	Thr	Pro	Leu	Asp	Leu	Asp	Asp	His	Gly
			1045						1050					1055	
Gly	Arg	Thr	Phe	Leu	Arg	Val	Leu	Leu	His	Leu	Thr	Met	His	Asp	Tyr
			1060					1065					1070		
Pro	Pro	Leu	Val	Ser	Gly	Ala	Leu	Gln	Leu	Leu	Phe	Arg	His	Phe	Ser
		1075					1080					1085			
Gln	Arg	Gln	Glu	Val	Leu	Gln	Ala	Phe	Lys	Gln	Val	Gln	Leu	Leu	Val
	1090					1095					1100				
Thr	Ser	Gln	Asp	Val	Asp	Asn	Tyr	Lys	Gln	Ile	Lys	Gln	Asp	Leu	Asp
1105					1110					1115					1120
Gln	Leu	Arg	Ser	Ile	Val	Glu	Lys	Ser	Glu	Leu	Trp	Val	Tyr	Lys	Gly
			1125						1130					1135	
Gln	Gly	Pro	Asp	Glu	Pro	Met	Asp	Gly	Ala	Ser	Gly	Glu	Asn	Glu	His
			1140					1145					1150		
Lys	Lys	Thr	Glu	Glu	Gly	Thr	Ser	Lys	Pro	Leu	Lys	His	Glu	Ser	Thr
		1155					1160					1165			
Ser	Ser	Tyr	Asn	Tyr	Arg	Val	Val	Lys	Glu	Ile	Leu	Ile	Arg	Leu	Ser
		1170				1175					1180				
Lys	Leu	Cys	Val	Gln	Glu	Ser	Ala	Ser	Val	Arg	Lys	Ser	Arg	Lys	Gln
1185					1190					1195					1200
Gln	Gln	Arg	Leu	Leu	Arg	Asn	Met	Gly	Ala	His	Ala	Val	Val	Leu	Glu
			1205						1210					1215	
Leu	Leu	Gln	Ile	Pro	Tyr	Glu	Lys	Ala	Glu	Asp	Thr	Lys	Met	Gln	Glu
			1220					1225					1230		
Ile	Met	Arg	Leu	Ala	His	Glu	Phe	Leu	Gln	Asn	Phe	Cys	Ala	Gly	Asn
		1235					1240					1245			

Gln Gln Asn Gln Ala Leu Leu His Lys His Ile Asn Leu Phe Leu Asn  
 1250 1255 1260  
 Pro Gly Ile Leu Glu Ala Val Thr Met Gln His Ile Phe Met Asn Asn  
 1265 1270 1275 1280  
 Phe Gln Leu Cys Ser Glu Ile Asn Glu Arg Val Val Gln His Phe Val  
 1285 1290 1295  
 His Cys Ile Glu Thr His Gly Arg Asn Val Gln Tyr Ile Lys Phe Leu  
 1300 1305 1310  
 Gln Thr Ile Val Lys Ala Glu Gly Lys Phe Ile Lys Lys Cys Gln Asp  
 1315 1320 1325  
 Met Val Met Ala Glu Leu Val Asn Ser Gly Glu Asp Val Leu Val Phe  
 1330 1335 1340  
 Tyr Asn Asp Arg Ala Ser Phe Gln Thr Leu Ile Gln Met Met Arg Ser  
 1345 1350 1355 1360  
 Glu Arg Asp Arg Met Asp Glu Asn Ser Pro Leu Phe Met Tyr His Ile  
 1365 1370 1375  
 His Leu Val Glu Leu Leu Ala Val Cys Thr Glu Gly Lys Asn Val Tyr  
 1380 1385 1390  
 Thr Glu Ile Lys Cys Asn Ser Leu Leu Pro Leu Asp Asp Ile Val Arg  
 1395 1400 1405  
 Val Val Thr His Glu Asp Cys Ile Pro Glu Val Lys Ile Ala Tyr Ile  
 1410 1415 1420  
 Asn Phe Leu Asn His Cys Tyr Val Asp Thr Glu Val Glu Met Lys Glu  
 1425 1430 1435 1440  
 Ile Tyr Thr Ser Asn His Met Trp Lys Leu Phe Glu Asn Phe Leu Val  
 1445 1450 1455  
 Asp Ile Cys Arg Ala Cys Asn Asn Thr Ser Asp Arg Lys His Ala Asp  
 1460 1465 1470  
 Ser Val Leu Glu Lys Tyr Val Thr Glu Ile Val Met Ser Ile Val Thr  
 1475 1480 1485  
 Thr Phe Phe Ser Ser Pro Phe Ser Asp Gln Ser Thr Thr Leu Gln Thr  
 1490 1495 1500  
 Arg Gln Pro Val Phe Val Gln Leu Leu Gln Gly Val Phe Arg Val Tyr  
 1505 1510 1515 1520  
 His Cys Asn Trp Leu Met Pro Ser Gln Lys Ala Ser Val Glu Ser Cys  
 1525 1530 1535  
 Ile Arg Val Leu Ser Asp Val Ala Lys Ser Arg Ala Ile Ala Ile Pro  
 1540 1545 1550  
 Val Asp Leu Asp Ser Gln Val Asn Asn Leu Phe Leu Lys Ser His Asn  
 1555 1560 1565  
 Ile Val Gln Lys Thr Ala Met Asn Trp Arg Leu Ser Ala Arg Asn Ala  
 1570 1575 1580  
 Ala Arg Arg Asp Glu Val Leu Ala Ala Ser Arg Asp Tyr Arg Asn Ile  
 1585 1590 1595 1600  
 Ile Glu Arg Leu Gln Asp Ile Val Ser Ala Leu Glu Asp Arg Leu Arg  
 1605 1610 1615  
 Pro Leu Val Gln Ala Glu Leu Ser Val Leu Val Asp Val Leu His Arg  
 1620 1625 1630  
 Pro Glu Leu Leu Phe Pro Glu Asn Thr Asp Ala Arg Arg Lys Cys Glu  
 1635 1640 1645  
 Ser Gly Gly Phe Ile Cys Lys Leu Ile Lys His Thr Lys Gln Leu Leu  
 1650 1655 1660  
 Glu Glu Asn Glu Glu Lys Leu Cys Ile Lys Val Leu Gln Thr Leu Arg  
 1665 1670 1675 1680  
 Glu Met Met Thr Lys Asp Arg Gly Tyr Gly Glu Lys Gln Ile Ser Ile  
 1685 1690 1695  
 Asp Glu Leu Glu Asn Ala Glu Leu Pro Gln Pro Pro Glu Ala Glu Asn  
 1700 1705 1710  
 Ser Thr Glu Glu Leu Glu Pro Ser Pro Pro Leu Arg Gln Leu Glu Asp  
 1715 1720 1725

His Lys Arg Gly Glu Ala Leu Arg Gln Ile Leu Val Asn Arg Tyr Tyr  
 1730 1735 1740  
 Gly Asn Ile Arg Pro Ser Gly Arg Arg Glu Ser Leu Thr Ser Phe Gly  
 1745 1750 1755 1760  
 Asn Gly Pro Leu Ser Pro Gly Gly Pro Ser Lys Pro Gly Gly Gly Gly  
 1765 1770 1775  
 Gly Gly Pro Gly Ser Gly Ser Thr Ser Arg Gly Glu Met Ser Leu Ala  
 1780 1785 1790  
 Glu Val Gln Cys His Leu Asp Lys Glu Gly Ala Ser Asn Leu Val Ile  
 1795 1800 1805  
 Asp Leu Ile Met Asn Ala Ser Ser Asp Arg Val Phe His Glu Ser Ile  
 1810 1815 1820  
 Leu Leu Ala Ile Ala Leu Leu Glu Gly Gly Asn Thr Thr Ile Gln His  
 1825 1830 1835 1840  
 Ser Phe Phe Cys Arg Leu Thr Glu Asp Lys Lys Ser Glu Lys Phe Phe  
 1845 1850 1855  
 Lys Val Phe Tyr Asp Arg Met Lys Val Ala Gln Gln Glu Ile Lys Ala  
 1860 1865 1870  
 Thr Val Thr Val Asn Thr Ser Asp Leu Gly Asn Lys Lys Lys Asp Asp  
 1875 1880 1885  
 Glu Val Asp Arg Asp Ala Pro Ser Arg Lys Lys Ala Lys Glu Pro Thr  
 1890 1895 1900  
 Thr Gln Ile Thr Glu Glu Val Arg Asp Gln Leu Leu Glu Ala Ser Ala  
 1905 1910 1915 1920  
 Ala Thr Arg Lys Ala Phe Thr Thr Phe Arg Arg Glu Ala Asp Pro Asp  
 1925 1930 1935  
 Asp His Tyr Gln Ser Gly Glu Gly Thr Gln Ala Thr Thr Asp Lys Ala  
 1940 1945 1950  
 Lys Asp Asp Leu Glu Met Ser Ala Val Ile Thr Ile Met Gln Pro Ile  
 1955 1960 1965  
 Leu Arg Phe Leu Gln Leu Leu Cys Glu Asn His Asn Arg Asp Leu Gln  
 1970 1975 1980  
 Asn Phe Leu Arg Cys Gln Asn Asn Lys Thr Asn Tyr Asn Leu Val Cys  
 1985 1990 1995 2000  
 Glu Thr Leu Gln Phe Leu Asp Cys Ile Cys Gly Ser Thr Thr Gly Gly  
 2005 2010 2015  
 Leu Gly Leu Leu Gly Leu Tyr Ile Asn Glu Lys Asn Val Ala Leu Ile  
 2020 2025 2030  
 Asn Gln Thr Leu Glu Ser Leu Thr Glu Tyr Cys Gln Gly Pro Cys His  
 2035 2040 2045  
 Glu Asn Gln Asn Cys Ile Ala Thr His Glu Ser Asn Gly Ile Asp Ile  
 2050 2055 2060  
 Ile Thr Ala Leu Ile Leu Asn Asp Ile Asn Pro Leu Gly Lys Lys Arg  
 2065 2070 2075 2080  
 Met Asp Leu Val Leu Glu Leu Lys Asn Asn Ala Ser Lys Leu Leu Leu  
 2085 2090 2095  
 Ala Ile Met Glu Ser Arg His Asp Ser Glu Asn Ala Glu Arg Ile Leu  
 2100 2105 2110  
 Tyr Asn Met Arg Pro Lys Glu Leu Val Glu Val Ile Lys Lys Ala Tyr  
 2115 2120 2125  
 Met Gln Gly Glu Val Glu Phe Glu Asp Gly Glu Asn Gly Glu Asp Gly  
 2130 2135 2140  
 Ala Ala Ser Pro Arg Asn Val Gly His Asn Ile Tyr Ile Leu Ala His  
 2145 2150 2155 2160  
 Gln Leu Ala Arg His Asn Lys Glu Leu Gln Thr Met Leu Lys Pro Gly  
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 Gly Gln Val Asp Gly Asp Glu Ala Leu Glu Phe Tyr Ala Lys His Thr  
 2180 2185 2190  
 Ala Gln Ile Glu Ile Val Arg Leu Asp Arg Thr Met Glu Gln Ile Val  
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Phe Pro Val Pro Ser Ile Cys Glu Phe Leu Thr Lys Glu Ser Lys Leu  
 2210 2215 2220  
 Arg Ile Tyr Tyr Thr Thr Glu Arg Asp Glu Gln Gly Ser Lys Ile Asn  
 2225 2230 2235 2240  
 Asp Phe Phe Leu Arg Ser Glu Asp Leu Phe Asn Glu Met Asn Trp Gln  
 2245 2250 2255  
 Lys Lys Leu Arg Ala Gln Pro Val Leu Tyr Trp Cys Ala Arg Asn Met  
 2260 2265 2270  
 Ser Phe Trp Ser Ser Ile Ser Phe Asn Leu Ala Val Leu Met Asn Leu  
 2275 2280 2285  
 Leu Val Ala Phe Phe Tyr Pro Phe Lys Gly Val Arg Gly Gly Thr Leu  
 2290 2295 2300  
 Glu Pro His Trp Ser Gly Leu Leu Trp Thr Ala Met Leu Ile Ser Leu  
 2305 2310 2315 2320  
 Ala Ile Val Ile Ala Leu Pro Lys Pro His Gly Ile Arg Ala Leu Ile  
 2325 2330 2335  
 Ala Ser Thr Ile Leu Arg Leu Ile Phe Ser Val Gly Leu Gln Pro Thr  
 2340 2345 2350  
 Leu Phe Leu Leu Gly Ala Phe Asn Val Cys Asn Lys Ile Ile Phe Leu  
 2355 2360 2365  
 Met Ser Phe Val Gly Asn Cys Gly Thr Phe Thr Arg Gly Tyr Arg Ala  
 2370 2375 2380  
 Met Val Leu Asp Val Glu Phe Leu Tyr His Leu Leu Tyr Leu Leu Ile  
 2385 2390 2395 2400  
 Cys Ala Met Gly Leu Phe Val His Glu Phe Phe Tyr Ser Leu Leu Leu  
 2405 2410 2415  
 Phe Asp Leu Val Tyr Arg Glu Glu Thr Leu Leu Asn Val Ile Lys Ser  
 2420 2425 2430  
 Val Thr Arg Asn Gly Arg Pro Ile Leu Thr Ala Ala Leu Ala Leu  
 2435 2440 2445  
 Ile Leu Val Tyr Leu Phe Ser Ile Val Gly Tyr Leu Phe Phe Lys Asp  
 2450 2455 2460  
 Asp Phe Ile Leu Glu Val Asp Arg Leu Pro Asn Glu Thr Ala Gly Pro  
 2465 2470 2475 2480  
 Glu Thr Gly Glu Ser Leu Ala Asn Asp Phe Leu Tyr Ser Asp Val Cys  
 2485 2490 2495  
 Arg Val Glu Thr Gly Glu Asn Cys Thr Ser Pro Ala Pro Lys Glu Glu  
 2500 2505 2510  
 Leu Leu Pro Val Glu Glu Thr Glu Gln Asp Lys Glu His Thr Cys Glu  
 2515 2520 2525  
 Thr Leu Leu Met Cys Ile Val Thr Val Leu Ser His Gly Leu Arg Ser  
 2530 2535 2540  
 Gly Gly Gly Val Gly Asp Val Leu Arg Lys Pro Ser Lys Glu Glu Pro  
 2545 2550 2555 2560  
 Leu Phe Ala Ala Arg Val Ile Tyr Asp Leu Leu Phe Phe Phe Met Val  
 2565 2570 2575  
 Ile Ile Ile Val Leu Asn Leu Ile Phe Gly Val Ile Ile Asp Thr Phe  
 2580 2585 2590  
 Ala Asp Leu Arg Ser Glu Lys Gln Lys Lys Glu Glu Ile Leu Lys Thr  
 2595 2600 2605  
 Thr Cys Phe Ile Cys Gly Leu Glu Arg Asp Lys Phe Asp Asn Lys Thr  
 2610 2615 2620  
 Val Thr Phe Glu Glu His Ile Lys Glu Glu His Asn Met Trp His Tyr  
 2625 2630 2635 2640  
 Leu Cys Phe Ile Val Leu Val Lys Val Lys Asp Ser Thr Glu Tyr Thr  
 2645 2650 2655  
 Gly Pro Glu Ser Tyr Val Ala Glu Met Ile Arg Glu Arg Asn Leu Asp  
 2660 2665 2670  
 Trp Phe Pro Arg Met Arg Ala Met Ser Leu Val Ser Ser Asp Ser Glu  
 2675 2680 2685

Gly Glu Gln Asn Glu Leu Arg Asn Leu Gln Glu Lys Leu Glu Ser Thr  
 2690 2695 2700  
 Met Lys Leu Val Thr Asn Leu Ser Gly Gln Leu Ser Glu Leu Lys Asp  
 2705 2710 2715 2720  
 Gln Met Thr Glu Gln Arg Lys Gln Lys Gln Arg Ile Gly Leu Leu Gly  
 2725 2730 2735  
 His Pro Pro His Met Asn Val Asn Pro Gln Gln Pro Ala  
 2740 2745

<210> 3

<211> 2710

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =  
 synthetic construct

<400> 3

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 Leu Tyr Ala Glu Gly Ser Thr Asn Gly Phe Ile Ser Thr Leu Gly Leu  
 20 25 30  
 Val Asp Asp Arg Cys Val Val Gln Pro Glu Ala Gly Asp Leu Asn Asn  
 35 40 45  
 Pro Pro Lys Lys Phe Arg Asp Cys Leu Phe Lys Leu Cys Pro Met Asn  
 50 55 60  
 Arg Tyr Ser Ala Gln Lys Gln Phe Trp Lys Ala Ala Lys Pro Gly Ala  
 65 70 75 80  
 Asn Ser Thr Thr Asp Ala Val Leu Leu Asn Lys Leu His His Ala Ala  
 85 90 95  
 Asp Leu Glu Lys Lys Gln Asn Glu Thr Glu Asn Arg Lys Leu Leu Gly  
 100 105 110  
 Thr Val Ile Gln Tyr Gly Asn Val Ile Gln Leu Leu His Leu Lys Ser  
 115 120 125  
 Asn Lys Tyr Leu Thr Val Asn Lys Arg Leu Pro Ala Leu Leu Glu Lys  
 130 135 140  
 Asn Ala Met Arg Val Thr Leu Asp Glu Ala Gly Asn Glu Gly Ser Trp  
 145 150 155 160  
 Phe Tyr Ile Gln Pro Phe Tyr Lys Leu Arg Ser Ile Gly Asp Ser Val  
 165 170 175  
 Val Ile Gly Asp Lys Val Val Leu Asn Pro Val Asn Ala Gly Gln Pro  
 180 185 190  
 Leu His Ala Ser Ser His Gln Leu Val Asp Asn Pro Gly Cys Asn Glu  
 195 200 205  
 Val Asn Ser Val Asn Cys Asn Thr Ser Trp Lys Ile Val Leu Phe Met  
 210 215 220  
 Lys Trp Ser Asp Asn Lys Asp Asp Ile Leu Lys Gly Gly Asp Val Val  
 225 230 235 240  
 Arg Leu Phe His Ala Glu Gln Glu Lys Phe Leu Thr Cys Asp Glu His  
 245 250 255  
 Arg Lys Lys Gln His Val Phe Leu Arg Thr Thr Gly Arg Gln Ser Ala  
 260 265 270  
 Thr Ser Ala Thr Ser Ser Lys Ala Leu Trp Glu Val Glu Val Val Gln  
 275 280 285  
 His Asp Pro Cys Arg Gly Gly Ala Gly Tyr Trp Asn Ser Leu Phe Arg  
 290 295 300  
 Phe Lys His Leu Ala Thr Gly His Tyr Leu Ala Ala Glu Val Asp Pro  
 305 310 315 320

Asp	Phe	Glu	Glu	Glu	Cys	Leu	Glu	Phe	Gln	Pro	Ser	Val	Asp	Pro	Asp	325	330	335
Gln	Asp	Ala	Ser	Arg	Ser	Arg	Leu	Arg	Asn	Ala	Gln	Glu	Lys	Met	Val	340	345	350
Tyr	Ser	Leu	Val	Ser	Val	Pro	Glu	Gly	Asn	Asp	Ile	Ser	Ser	Ile	Phe	355	360	365
Glu	Leu	Asp	Pro	Thr	Thr	Leu	Arg	Gly	Gly	Asp	Ser	Leu	Val	Pro	Arg	370	375	380
Asn	Ser	Tyr	Val	Arg	Leu	Arg	His	Leu	Cys	Thr	Asn	Thr	Trp	Val	His	385	390	395
Ser	Thr	Asn	Ile	Pro	Ile	Asp	Lys	Glu	Glu	Lys	Pro	Val	Met	Leu		405	410	415
Lys	Ile	Gly	Thr	Ser	Pro	Leu	Lys	Glu	Asp	Lys	Glu	Ala	Phe	Ala	Ile	420	425	430
Val	Pro	Val	Ser	Pro	Ala	Glu	Val	Arg	Asp	Leu	Asp	Phe	Ala	Asn	Asp	435	440	445
Ala	Ser	Lys	Val	Leu	Gly	Ser	Ile	Ala	Gly	Lys	Leu	Glu	Lys	Gly	Thr	450	455	460
Ile	Thr	Gln	Asn	Glu	Arg	Ser	Val	Thr	Lys	Leu	Leu	Glu	Asp	Leu		465	470	475
Val	Tyr	Phe	Val	Thr	Gly	Gly	Thr	Asn	Ser	Gly	Gln	Asp	Val	Leu	Glu	485	490	495
Val	Val	Phe	Ser	Lys	Pro	Asn	Arg	Glu	Arg	Gln	Lys	Leu	Met	Arg	Glu	500	505	510
Gln	Asn	Ile	Leu	Lys	Gln	Ile	Phe	Lys	Leu	Leu	Gln	Ala	Pro	Phe	Thr	515	520	525
Asp	Cys	Gly	Asp	Gly	Pro	Met	Leu	Arg	Leu	Glu	Glu	Leu	Gly	Asp	Gln	530	535	540
Arg	His	Ala	Pro	Phe	Arg	His	Ile	Cys	Arg	Leu	Cys	Tyr	Arg	Val	Leu	545	550	555
Arg	His	Ser	Gln	Gln	Asp	Tyr	Arg	Lys	Asn	Gln	Glu	Tyr	Ile	Ala	Lys	565	570	575
Gln	Phe	Gly	Phe	Met	Gln	Lys	Gln	Ile	Gly	Tyr	Asp	Val	Leu	Ala	Glu	580	585	590
Asp	Thr	Ile	Thr	Ala	Leu	Leu	His	Asn	Asn	Arg	Lys	Leu	Leu	Glu	Lys	595	600	605
His	Ile	Thr	Ala	Ala	Glu	Ile	Asp	Thr	Phe	Val	Ser	Leu	Val	Arg	Lys	610	615	620
Asn	Arg	Glu	Pro	Arg	Phe	Leu	Asp	Tyr	Leu	Ser	Asp	Leu	Cys	Val	Ser	625	630	635
Met	Asn	Lys	Ser	Ile	Pro	Val	Thr	Gln	Glu	Leu	Ile	Cys	Lys	Ala	Val	645	650	655
Leu	Asn	Pro	Thr	Asn	Ala	Asp	Ile	Leu	Ile	Glu	Thr	Lys	Leu	Val	Leu	660	665	670
Ser	Arg	Phe	Glu	Phe	Glu	Gly	Val	Ser	Thr	Gly	Glu	Asn	Ala	Leu	Glu	675	680	685
Ala	Gly	Glu	Asp	Glu	Glu	Glu	Val	Trp	Leu	Phe	Trp	Arg	Asp	Ser	Asn	690	695	700
Lys	Glu	Ile	Arg	Ser	Lys	Ser	Val	Arg	Glu	Leu	Ala	Gln	Asp	Ala	Lys	705	710	715
Glu	Gly	Gln	Lys	Glu	Asp	Arg	Asp	Val	Leu	Ser	Tyr	Tyr	Arg	Tyr	Gln	725	730	735
Leu	Asn	Leu	Phe	Ala	Arg	Met	Cys	Leu	Asp	Arg	Gln	Tyr	Leu	Ala	Ile	740	745	750
Asn	Glu	Ile	Ser	Gly	Gln	Leu	Asp	Val	Asp	Leu	Ile	Leu	Arg	Cys	Met	755	760	765
Ser	Asp	Glu	Asn	Leu	Pro	Tyr	Asp	Leu	Arg	Ala	Ser	Phe	Cys	Arg	Leu	770	775	780
Met	Leu	His	Met	His	Val	Asp	Arg	Asp	Pro	Gln	Glu	Gln	Val	Thr	Pro	785	790	795

Val	Lys	Tyr	Ala	Arg	Leu	Trp	Ser	Glu	Ile	Pro	Ser	Glu	Ile	Ala	Ile	805	810	815
Asp	Asp	Tyr	Asp	Ser	Ser	Gly	Ala	Ser	Lys	Asp	Glu	Ile	Lys	Glu	Arg	820	825	830
Phe	Ala	Gln	Thr	Met	Glu	Phe	Val	Glu	Glu	Tyr	Leu	Arg	Asp	Val	Val	835	840	845
Cys	Gln	Arg	Phe	Pro	Phe	Ser	Asp	Lys	Glu	Lys	Asn	Lys	Leu	Thr	Phe	850	855	860
Glu	Val	Val	Asn	Leu	Ala	Arg	Asn	Leu	Ile	Tyr	Phe	Gly	Phe	Tyr	Asn	865	870	875
Phe	Ser	Asp	Leu	Leu	Arg	Leu	Thr	Lys	Ile	Leu	Leu	Ala	Ile	Leu	Asp	885	890	895
Cys	Val	His	Val	Thr	Thr	Ile	Phe	Pro	Ile	Ser	Lys	Met	Thr	Lys	Gly	900	905	910
Glu	Glu	Asn	Lys	Gly	Ser	Asn	Val	Met	Arg	Ser	Ile	His	Gly	Val	Gly	915	920	925
Glu	Leu	Met	Thr	Gln	Val	Val	Leu	Arg	Gly	Gly	Gly	Phe	Leu	Pro	Met	930	935	940
Thr	Pro	Met	Ala	Ala	Ala	Pro	Glu	Gly	Asn	Val	Lys	Gln	Ala	Glu	Pro	945	950	955
Glu	Lys	Glu	Asp	Ile	Met	Val	Met	Asp	Thr	Lys	Leu	Lys	Ile	Ile	Glu	965	970	975
Ile	Leu	Gln	Phe	Ile	Leu	Asn	Val	Arg	Leu	Asp	Tyr	Arg	Ile	Ser	Cys	980	985	990
Leu	Leu	Cys	Ile	Phe	Lys	Arg	Glu	Phe	Asp	Glu	Ser	Asn	Ser	Gln	Ser	995	1000	1005
Ser	Glu	Thr	Ser	Ser	Gly	Asn	Ser	Ser	Gln	Glu	Gly	Pro	Ser	Asn	Val	1010	1015	1020
Pro	Gly	Ala	Leu	Asp	Phe	Glu	His	Ile	Glu	Glu	Gln	Ala	Glu	Gly	Ile	1025	1030	1035
Phe	Gly	Gly	Ser	Glu	Glu	Asn	Thr	Pro	Leu	Asp	Leu	Asp	Asp	His	Gly	1045	1050	1055
Gly	Arg	Thr	Phe	Leu	Arg	Val	Leu	Leu	His	Leu	Thr	Met	His	Asp	Tyr	1060	1065	1070
Pro	Pro	Leu	Val	Ser	Gly	Ala	Leu	Gln	Leu	Leu	Phe	Arg	His	Phe	Ser	1075	1080	1085
Gln	Arg	Gln	Glu	Val	Leu	Gln	Ala	Phe	Lys	Gln	Val	Gln	Leu	Leu	Val	1090	1095	1100
Thr	Ser	Gln	Asp	Val	Asp	Asn	Tyr	Lys	Gln	Ile	Lys	Gln	Asp	Leu	Asp	1105	1110	1115
Gln	Leu	Arg	Ser	Ile	Val	Glu	Lys	Ser	Glu	Leu	Trp	Val	Tyr	Lys	Gly	1125	1130	1135
Gln	Gly	Pro	Asp	Glu	Pro	Met	Asp	Gly	Ala	Ser	Gly	Glu	Asn	Glu	His	1140	1145	1150
Lys	Lys	Thr	Glu	Glu	Gly	Thr	Ser	Lys	Pro	Leu	Lys	His	Glu	Ser	Thr	1155	1160	1165
Ser	Ser	Tyr	Asn	Tyr	Arg	Val	Val	Lys	Glu	Ile	Leu	Ile	Arg	Leu	Ser	1170	1175	1180
Lys	Leu	Cys	Val	Gln	Glu	Ser	Ala	Ser	Val	Arg	Lys	Ser	Arg	Lys	Gln	1185	1190	1195
Gln	Gln	Arg	Leu	Leu	Arg	Asn	Met	Gly	Ala	His	Ala	Val	Val	Leu	Glu	1205	1210	1215
Leu	Leu	Gln	Ile	Pro	Tyr	Glu	Lys	Ala	Glu	Asp	Thr	Lys	Met	Gln	Glu	1220	1225	1230
Ile	Met	Arg	Leu	Ala	His	Glu	Phe	Leu	Gln	Asn	Phe	Cys	Ala	Gly	Asn	1235	1240	1245
Gln	Gln	Asn	Gln	Ala	Leu	Leu	His	Lys	His	Ile	Asn	Leu	Phe	Leu	Asn	1250	1255	1260
Pro	Gly	Ile	Leu	Glu	Ala	Val	Thr	Met	Gln	His	Ile	Phe	Met	Asn	Asn	1265	1270	1275
																		1280

Phe Gln Leu Cys Ser Glu Ile Asn Glu Arg Val Val Gln His Phe Val  
 1285 1290 1295  
 His Cys Ile Glu Thr His Gly Arg Asn Val Gln Tyr Ile Lys Phe Leu  
 1300 1305 1310  
 Gln Thr Ile Val Lys Ala Glu Gly Lys Phe Ile Lys Lys Cys Gln Asp  
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 Met Val Met Ala Glu Leu Val Asn Ser Gly Glu Asp Val Leu Val Phe  
 1330 1335 1340  
 Tyr Asn Asp Arg Ala Ser Phe Gln Thr Leu Ile Gln Met Met Arg Ser  
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 Glu Arg Asp Arg Met Asp Glu Asn Ser Pro Leu Phe Met Tyr His Ile  
 1365 1370 1375  
 His Leu Val Glu Leu Leu Ala Val Cys Thr Glu Gly Lys Asn Val Tyr  
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 Thr Glu Ile Lys Cys Asn Ser Leu Leu Pro Leu Asp Asp Ile Val Arg  
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 Ile Tyr Thr Ser Asn His Met Trp Lys Leu Phe Glu Asn Phe Leu Val  
 1445 1450 1455  
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 Ser Val Leu Glu Lys Tyr Val Thr Glu Ile Val Met Ser Ile Val Thr  
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 Thr Ser Arg Gly Glu Met Ser Leu Ala Glu Val Gln Cys His Leu Asp  
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Lys Glu Gly Ala Ser Asn Leu Val Ile Asp Leu Ile Met Asn Ala Ser  
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 Ser Asp Arg Val Phe His Glu Ser Ile Leu Leu Ala Ile Ala Leu Leu  
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 Glu Gly Gly Asn Thr Thr Ile Gln His Ser Phe Phe Cys Arg Leu Thr  
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 Glu Asp Lys Lys Ser Glu Lys Phe Phe Lys Val Phe Tyr Asp Arg Met  
 1810 1815 1820  
 Lys Val Ala Gln Gln Glu Ile Lys Ala Thr Val Thr Val Asn Thr Ser  
 1825 1830 1835 1840  
 Asp Leu Gly Asn Lys Lys Lys Asp Asp Glu Val Asp Arg Asp Ala Pro  
 1845 1850 1855  
 Ser Arg Lys Lys Ala Lys Glu Pro Thr Thr Gln Ile Thr Glu Glu Val  
 1860 1865 1870  
 Arg Asp Gln Leu Leu Glu Ala Ser Ala Ala Thr Arg Lys Ala Phe Thr  
 1875 1880 1885  
 Thr Phe Arg Arg Glu Ala Asp Pro Asp Asp His Tyr Gln Ser Gly Glu  
 1890 1895 1900  
 Gly Thr Gln Ala Thr Thr Asp Lys Ala Lys Asp Asp Leu Glu Met Ser  
 1905 1910 1915 1920  
 Ala Val Ile Thr Ile Met Gln Pro Ile Leu Arg Phe Leu Gln Leu Leu  
 1925 1930 1935  
 Cys Glu Asn His Asn Arg Asp Leu Gln Asn Phe Leu Arg Cys Gln Asn  
 1940 1945 1950  
 Asn Lys Thr Asn Tyr Asn Leu Val Cys Glu Thr Leu Gln Phe Leu Asp  
 1955 1960 1965  
 Cys Ile Cys Gly Ser Thr Thr Gly Gly Leu Gly Leu Leu Gly Leu Tyr  
 1970 1975 1980  
 Ile Asn Glu Lys Asn Val Ala Leu Ile Asn Gln Thr Leu Glu Ser Leu  
 1985 1990 1995 2000  
 Thr Glu Tyr Cys Gln Gly Pro Cys His Glu Asn Gln Asn Cys Ile Ala  
 2005 2010 2015  
 Thr His Glu Ser Asn Gly Ile Asp Ile Ile Thr Ala Leu Ile Leu Asn  
 2020 2025 2030  
 Asp Ile Asn Pro Leu Gly Lys Lys Arg Met Asp Leu Val Leu Glu Leu  
 2035 2040 2045  
 Lys Asn Asn Ala Ser Lys Leu Leu Ala Ile Met Glu Ser Arg His  
 2050 2055 2060  
 Asp Ser Glu Asn Ala Glu Arg Ile Leu Tyr Asn Met Arg Pro Lys Glu  
 2065 2070 2075 2080  
 Leu Val Glu Val Ile Lys Lys Ala Tyr Met Gln Gly Glu Val Glu Phe  
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 Glu Asp Gly Glu Asn Gly Glu Asp Gly Ala Ala Ser Pro Arg Asn Val  
 2100 2105 2110  
 Gly His Asn Ile Tyr Ile Leu Ala His Gln Leu Ala Arg His Asn Lys  
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 Glu Leu Gln Thr Met Leu Lys Pro Gly Gly Gln Val Asp Gly Asp Glu  
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 Leu Asp Arg Thr Met Glu Gln Ile Val Phe Pro Val Pro Ser Ile Cys  
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 Glu Phe Leu Thr Lys Glu Ser Lys Leu Arg Ile Tyr Tyr Thr Thr Glu  
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 Asp Leu Phe Asn Glu Met Asn Trp Gln Lys Lys Leu Arg Ala Gln Pro  
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 Val Leu Tyr Trp Cys Ala Arg Asn Met Ser Phe Trp Ser Ser Ile Ser  
 2225 2230 2235 2240

Phe Asn Leu Ala Val Leu Met Asn Leu Leu Val Ala Phe Phe Tyr Pro  
 2245 2250 2255  
 Phe Lys Gly Val Arg Gly Gly Thr Leu Glu Pro His Trp Ser Gly Leu  
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 Leu Trp Thr Ala Met Leu Ile Ser Leu Ala Ile Val Ile Ala Leu Pro  
 2275 2280 2285  
 Lys Pro His Gly Ile Arg Ala Leu Ile Ala Ser Thr Ile Leu Arg Leu  
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 Ile Phe Ser Val Gly Leu Gln Pro Thr Leu Phe Leu Leu Gly Ala Phe  
 2305 2310 2315 2320  
 Asn Val Cys Asn Lys Ile Ile Phe Leu Met Ser Phe Val Gly Asn Cys  
 2325 2330 2335  
 Gly Thr Phe Thr Arg Gly Tyr Arg Ala Met Val Leu Asp Val Glu Phe  
 2340 2345 2350  
 Leu Tyr His Leu Leu Tyr Leu Leu Ile Cys Ala Met Gly Leu Phe Val  
 2355 2360 2365  
 His Glu Phe Phe Tyr Ser Leu Leu Leu Phe Asp Leu Val Tyr Arg Glu  
 2370 2375 2380  
 Glu Thr Leu Leu Asn Val Ile Lys Ser Val Thr Arg Asn Gly Arg Pro  
 2385 2390 2395 2400  
 Ile Ile Leu Thr Ala Ala Leu Ala Leu Ile Leu Val Tyr Leu Phe Ser  
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 Ile Val Gly Tyr Leu Phe Phe Lys Asp Asp Phe Ile Leu Glu Val Asp  
 2420 2425 2430  
 Arg Leu Pro Asn Glu Thr Ala Gly Pro Glu Thr Gly Glu Ser Leu Ala  
 2435 2440 2445  
 Asn Asp Phe Leu Tyr Ser Asp Val Cys Arg Val Glu Thr Gly Glu Asn  
 2450 2455 2460  
 Cys Thr Ser Pro Ala Pro Lys Glu Glu Leu Leu Pro Val Glu Glu Thr  
 2465 2470 2475 2480  
 Glu Gln Asp Lys Glu His Thr Cys Glu Thr Leu Leu Met Cys Ile Val  
 2485 2490 2495  
 Thr Val Leu Ser His Gly Leu Arg Ser Gly Gly Gly Val Gly Asp Val  
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 Leu Arg Lys Pro Ser Lys Glu Glu Pro Leu Phe Ala Ala Arg Val Ile  
 2515 2520 2525  
 Tyr Asp Leu Leu Phe Phe Phe Met Val Ile Ile Ile Val Leu Asn Leu  
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 Ile Phe Gly Val Ile Ile Asp Thr Phe Ala Asp Leu Arg Ser Glu Lys  
 2545 2550 2555 2560  
 Gln Lys Lys Glu Glu Ile Leu Lys Thr Thr Cys Phe Ile Cys Gly Leu  
 2565 2570 2575  
 Glu Arg Asp Lys Phe Asp Asn Lys Thr Val Thr Phe Glu Glu His Ile  
 2580 2585 2590  
 Lys Glu Glu His Asn Met Trp His Tyr Leu Cys Phe Ile Val Leu Val  
 2595 2600 2605  
 Lys Val Lys Asp Ser Thr Glu Tyr Thr Gly Pro Glu Ser Tyr Val Ala  
 2610 2615 2620  
 Glu Met Ile Arg Glu Arg Asn Leu Asp Trp Phe Pro Arg Met Arg Ala  
 2625 2630 2635 2640  
 Met Ser Leu Val Ser Ser Asp Ser Glu Gly Glu Gln Asn Glu Leu Arg  
 2645 2650 2655  
 Asn Leu Gln Glu Lys Leu Glu Ser Thr Met Lys Leu Val Thr Asn Leu  
 2660 2665 2670  
 Ser Gly Gln Leu Ser Glu Leu Lys Asp Gln Met Thr Glu Gln Arg Lys  
 2675 2680 2685  
 Gln Lys Gln Arg Ile Gly Leu Leu Gly His Pro Pro His Met Asn Val  
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 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:/note =  
 synthetic construct

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 Leu Tyr Ala Glu Gly Ser Thr Asn Gly Phe Ile Ser Thr Leu Gly Leu  
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 Val Asp Asp Arg Cys Val Val Gln Pro Glu Ala Gly Asp Leu Asn Asn  
 35 40 45  
 Pro Pro Lys Lys Phe Arg Asp Cys Leu Phe Lys Leu Cys Pro Met Asn  
 50 55 60  
 Arg Tyr Ser Ala Gln Lys Gln Phe Trp Lys Ala Ala Lys Pro Gly Ala  
 65 70 75 80  
 Asn Ser Thr Thr Asp Ala Val Leu Leu Asn Lys Leu His His Ala Ala  
 85 90 95  
 Asp Leu Glu Lys Lys Gln Asn Glu Thr Glu Asn Arg Lys Leu Leu Gly  
 100 105 110  
 Thr Val Ile Gln Tyr Gly Asn Val Ile Gln Leu Leu His Leu Lys Ser  
 115 120 125  
 Asn Lys Tyr Leu Thr Val Asn Lys Arg Leu Pro Ala Leu Leu Glu Lys  
 130 135 140  
 Asn Ala Met Arg Val Thr Leu Asp Glu Ala Gly Asn Glu Gly Ser Trp  
 145 150 155 160  
 Phe Tyr Ile Gln Pro Phe Tyr Lys Leu Arg Ser Ile Gly Asp Ser Val  
 165 170 175  
 Val Ile Gly Asp Lys Val Val Leu Asn Pro Val Asn Ala Gly Gln Pro  
 180 185 190  
 Leu His Ala Ser Ser His Gln Leu Val Asp Asn Pro Gly Cys Asn Glu  
 195 200 205  
 Val Asn Ser Val Asn Cys Asn Thr Ser Trp Lys Ile Val Leu Phe Met  
 210 215 220  
 Lys Trp Ser Asp Asn Lys Asp Asp Ile Leu Lys Gly Gly Asp Val Val  
 225 230 235 240  
 Arg Leu Phe His Ala Glu Gln Glu Lys Phe Leu Thr Cys Asp Glu His  
 245 250 255  
 Arg Lys Lys Gln His Val Phe Leu Arg Thr Thr Gly Arg Gln Ser Ala  
 260 265 270  
 Thr Ser Ala Thr Ser Ser Lys Ala Leu Trp Glu Val Glu Val Val Gln  
 275 280 285  
 His Asp Pro Cys Arg Gly Gly Ala Gly Tyr Trp Asn Ser Leu Phe Arg  
 290 295 300  
 Phe Lys His Leu Ala Thr Gly His Tyr Leu Ala Ala Glu Val Asp Pro  
 305 310 315 320  
 Asp Phe Glu Glu Glu Cys Leu Glu Phe Gln Pro Ser Val Asp Pro Asp  
 325 330 335  
 Gln Asp Ala Ser Arg Ser Arg Leu Arg Asn Ala Gln Glu Lys Met Val  
 340 345 350  
 Tyr Ser Leu Val Ser Val Pro Glu Gly Asn Asp Ile Ser Ser Ile Phe  
 355 360 365  
 Glu Leu Asp Pro Thr Thr Leu Arg Gly Gly Asp Ser Leu Val Pro Arg  
 370 375 380

Asn	Ser	Tyr	Val	Arg	Leu	Arg	His	Leu	Cys	Thr	Asn	Thr	Trp	Val	His
385					390					395					400
Ser	Thr	Asn	Ile	Pro	Ile	Asp	Lys	Glu	Glu	Glu	Lys	Pro	Val	Met	Leu
				405					410					415	
Lys	Ile	Gly	Thr	Ser	Pro	Leu	Lys	Glu	Asp	Lys	Glu	Ala	Phe	Ala	Ile
			420					425					430		
Val	Pro	Val	Ser	Pro	Ala	Glu	Val	Arg	Asp	Leu	Asp	Phe	Ala	Asn	Asp
			435				440					445			
Ala	Ser	Lys	Val	Leu	Gly	Ser	Ile	Ala	Gly	Lys	Leu	Glu	Lys	Gly	Thr
	450					455					460				
Ile	Thr	Gln	Asn	Glu	Arg	Arg	Ser	Val	Thr	Lys	Leu	Leu	Glu	Asp	Leu
465					470					475					480
Val	Tyr	Phe	Val	Thr	Gly	Gly	Thr	Asn	Ser	Gly	Gln	Asp	Val	Leu	Glu
				485					490					495	
Val	Val	Phe	Ser	Lys	Pro	Asn	Arg	Glu	Arg	Gln	Lys	Leu	Met	Arg	Glu
			500					505					510		
Gln	Asn	Ile	Leu	Lys	Gln	Ile	Phe	Lys	Leu	Leu	Gln	Ala	Pro	Phe	Thr
		515					520					525			
Asp	Cys	Gly	Asp	Gly	Pro	Met	Leu	Arg	Leu	Glu	Glu	Leu	Gly	Asp	Gln
	530					535						540			
Arg	His	Ala	Pro	Phe	Arg	His	Ile	Cys	Arg	Leu	Cys	Tyr	Arg	Val	Leu
545					550					555					560
Arg	His	Ser	Gln	Gln	Asp	Tyr	Arg	Lys	Asn	Gln	Glu	Tyr	Ile	Ala	Lys
				565					570					575	
Gln	Phe	Gly	Phe	Met	Gln	Lys	Gln	Ile	Gly	Tyr	Asp	Val	Leu	Ala	Glu
			580					585					590		
Asp	Thr	Ile	Thr	Ala	Leu	Leu	His	Asn	Asn	Arg	Lys	Leu	Leu	Glu	Lys
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His	Ile	Thr	Ala	Ala	Glu	Ile	Asp	Thr	Phe	Val	Ser	Leu	Val	Arg	Lys
	610					615					620				
Asn	Arg	Glu	Pro	Arg	Phe	Leu	Asp	Tyr	Leu	Ser	Asp	Leu	Cys	Val	Ser
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Met	Asn	Lys	Ser	Ile	Pro	Val	Thr	Gln	Glu	Leu	Ile	Cys	Lys	Ala	Val
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Leu	Asn	Pro	Thr	Asn	Ala	Asp	Ile	Leu	Ile	Glu	Thr	Lys	Leu	Val	Leu
			660					665					670		
Ser	Arg	Phe	Glu	Phe	Glu	Gly	Val	Ser	Thr	Gly	Glu	Asn	Ala	Leu	Glu
		675					680					685			
Ala	Gly	Glu	Asp	Glu	Glu	Glu	Val	Trp	Leu	Phe	Trp	Arg	Asp	Ser	Asn
	690					695					700				
Lys	Glu	Ile	Arg	Ser	Lys	Ser	Val	Arg	Glu	Leu	Ala	Gln	Asp	Ala	Lys
705					710					715					720
Glu	Gly	Gln	Lys	Glu	Asp	Arg	Asp	Val	Leu	Ser	Tyr	Tyr	Arg	Tyr	Gln
				725					730					735	
Leu	Asn	Leu	Phe	Ala	Arg	Met	Cys	Leu	Asp	Arg	Gln	Tyr	Leu	Ala	Ile
			740					745					750		
Asn	Glu	Ile	Ser	Gly	Gln	Leu	Asp	Val	Asp	Leu	Ile	Leu	Arg	Cys	Met
	755						760					765			
Ser	Asp	Glu	Asn	Leu	Pro	Tyr	Asp	Leu	Arg	Ala	Ser	Phe	Cys	Arg	Leu
	770					775					780				
Met	Leu	His	Met	His	Val	Asp	Arg	Asp	Pro	Gln	Glu	Gln	Val	Thr	Pro
785					790					795					800
Val	Lys	Tyr	Ala	Arg	Leu	Trp	Ser	Glu	Ile	Pro	Ser	Glu	Ile	Ala	Ile
				805					810					815	
Asp	Asp	Tyr	Asp	Ser	Ser	Gly	Ala	Ser	Lys	Asp	Glu	Ile	Lys	Glu	Arg
			820					825					830		
Phe	Ala	Gln	Thr	Met	Glu	Phe	Val	Glu	Glu	Tyr	Leu	Arg	Asp	Val	Val
		835					840					845			
Cys	Gln	Arg	Phe	Pro	Phe	Ser	Asp	Lys	Glu	Lys	Asn	Lys	Leu	Thr	Phe
	850					855					860				

Glu Val Val Asn Leu Ala Arg Asn Leu Ile Tyr Phe Gly Phe Tyr Asn  
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 Phe Ser Asp Leu Leu Arg Leu Thr Lys Ile Leu Leu Ala Ile Leu Asp  
 885 890 895  
  
 Cys Val His Val Thr Thr Ile Phe Pro Ile Ser Lys Met Thr Lys Gly  
 900 905 910  
 Glu Glu Asn Lys Gly Ser Asn Val Met Arg Ser Ile His Gly Val Gly  
 915 920 925  
 Glu Leu Met Thr Gln Val Val Leu Arg Gly Gly Gly Phe Leu Pro Met  
 930 935 940  
 Thr Pro Met Ala Ala Ala Pro Glu Gly Asn Val Lys Gln Ala Glu Pro  
 945 950 955 960  
 Glu Lys Glu Asp Ile Met Val Met Asp Thr Lys Leu Lys Ile Ile Glu  
 965 970 975  
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 980 985 990  
 Leu Leu Cys Ile Phe Lys Arg Glu Phe Asp Glu Ser Asn Ser Gln Ser  
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 Pro Gly Ala Leu Asp Phe Glu His Ile Glu Glu Gln Ala Glu Gly Ile  
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 Gly Arg Thr Phe Leu Arg Val Leu Leu His Leu Thr Met His Asp Tyr  
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 Gln Arg Gln Glu Val Leu Gln Ala Phe Lys Gln Val Gln Leu Leu Val  
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 Thr Ser Gln Asp Val Asp Asn Tyr Lys Gln Ile Lys Gln Asp Leu Asp  
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 Lys Lys Thr Glu Glu Gly Thr Ser Lys Pro Leu Lys His Glu Ser Thr  
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 Ser Ser Tyr Asn Tyr Arg Val Val Lys Glu Ile Leu Ile Arg Leu Ser  
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 Phe Gln Leu Cys Ser Glu Ile Asn Glu Arg Val Val Gln His Phe Val  
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 Met Val Met Ala Glu Leu Val Asn Ser Gly Glu Asp Val Leu Val Phe  
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Tyr Asn Asp Arg Ala Ser Phe Gln Thr Leu Ile Gln Met Met Arg Ser  
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 Val Val Thr His Glu Asp Cys Ile Pro Glu Val Lys Ile Ala Tyr Ile  
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 1635 1640 1645  
 Ser Gly Gly Phe Ile Cys Lys Leu Ile Lys His Thr Lys Gln Leu Leu  
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 Glu Met Met Thr Lys Asp Arg Gly Tyr Gly Glu Lys Gln Ile Ser Ile  
 1685 1690 1695  
 Asp Glu Leu Glu Asn Ala Glu Leu Pro Gln Pro Pro Glu Ala Glu Asn  
 1700 1705 1710  
 Ser Thr Glu Glu Leu Glu Pro Ser Pro Pro Leu Arg Gln Leu Glu Asp  
 1715 1720 1725  
 His Lys Arg Gly Glu Ala Leu Arg Gln Ile Leu Val Asn Arg Tyr Tyr  
 1730 1735 1740  
 Gly Asn Ile Arg Pro Ser Gly Arg Arg Glu Ser Leu Thr Ser Phe Gly  
 1745 1750 1755 1760  
 Asn Gly Pro Leu Ser Pro Gly Gly Pro Ser Lys Pro Gly Gly Gly Gly  
 1765 1770 1775  
 Gly Gly Pro Gly Ser Gly Ser Thr Ser Arg Gly Glu Met Ser Leu Ala  
 1780 1785 1790  
 Glu Val Gln Cys His Leu Asp Lys Glu Gly Ala Ser Asn Leu Val Ile  
 1795 1800 1805  
 Asp Leu Ile Met Asn Ala Ser Ser Asp Arg Val Phe His Glu Ser Ile  
 1810 1815 1820

Leu Leu Ala Ile Ala Leu Leu Glu Gly Gly Asn Thr Thr Ile Gln His  
 1825 1830 1835 1840  
 Ser Phe Phe Cys Arg Leu Thr Glu Asp Lys Lys Ser Glu Lys Phe Phe  
 1845 1850 1855  
 Lys Val Phe Tyr Asp Arg Met Lys Val Ala Gln Gln Glu Ile Lys Ala  
 1860 1865 1870  
 Thr Val Thr Val Asn Thr Ser Asp Leu Gly Asn Lys Lys Lys Asp Asp  
 1875 1880 1885  
 Glu Val Asp Arg Asp Ala Pro Ser Arg Lys Lys Ala Lys Glu Pro Thr  
 1890 1895 1900  
 Thr Gln Ile Thr Glu Glu Val Arg Asp Gln Leu Leu Glu Ala Ser Ala  
 1905 1910 1915 1920  
 Ala Thr Arg Lys Ala Phe Thr Thr Phe Arg Arg Glu Ala Asp Pro Asp  
 1925 1930 1935  
 Asp His Tyr Gln Ser Gly Glu Gly Thr Gln Ala Thr Thr Asp Lys Ala  
 1940 1945 1950  
 Lys Asp Asp Leu Glu Met Ser Ala Val Ile Thr Ile Met Gln Pro Ile  
 1955 1960 1965  
 Leu Arg Phe Leu Gln Leu Leu Cys Glu Asn His Asn Arg Asp Leu Gln  
 1970 1975 1980  
 Asn Phe Leu Arg Cys Gln Asn Asn Lys Thr Asn Tyr Asn Leu Val Cys  
 1985 1990 1995 2000  
 Glu Thr Leu Gln Phe Leu Asp Cys Ile Cys Gly Ser Thr Thr Gly Gly  
 2005 2010 2015  
 Leu Gly Leu Leu Gly Leu Tyr Ile Asn Glu Lys Asn Val Ala Leu Ile  
 2020 2025 2030  
 Asn Gln Thr Leu Glu Ser Leu Thr Glu Tyr Cys Gln Gly Pro Cys His  
 2035 2040 2045  
 Glu Asn Gln Asn Cys Ile Ala Thr His Glu Ser Asn Gly Ile Asp Ile  
 2050 2055 2060  
 Ile Thr Ala Leu Ile Leu Asn Asp Ile Asn Pro Leu Gly Lys Lys Arg  
 2065 2070 2075 2080  
 Met Asp Leu Val Leu Glu Leu Lys Asn Asn Ala Ser Lys Leu Leu Leu  
 2085 2090 2095  
 Ala Ile Met Glu Ser Arg His Asp Ser Glu Asn Ala Glu Arg Ile Leu  
 2100 2105 2110  
 Tyr Asn Met Arg Pro Lys Glu Leu Val Glu Val Ile Lys Lys Ala Tyr  
 2115 2120 2125  
 Met Gln Gly Glu Val Glu Phe Glu Asp Gly Glu Asn Gly Glu Asp Gly  
 2130 2135 2140  
 Ala Ala Ser Pro Arg Asn Val Gly His Asn Ile Tyr Ile Leu Ala His  
 2145 2150 2155 2160  
 Gln Leu Ala Arg His Asn Lys Glu Leu Gln Thr Met Leu Lys Pro Gly  
 2165 2170 2175  
 Gly Gln Val Asp Gly Asp Glu Ala Leu Glu Phe Tyr Ala Lys His Thr  
 2180 2185 2190  
 Ala Gln Ile Glu Ile Val Arg Leu Asp Arg Thr Met Glu Gln Ile Val  
 2195 2200 2205  
 Phe Pro Val Pro Ser Ile Cys Glu Phe Leu Thr Lys Glu Ser Lys Leu  
 2210 2215 2220  
 Arg Ile Tyr Tyr Thr Thr Glu Arg Asp Glu Gln Gly Ser Lys Ile Asn  
 2225 2230 2235 2240  
 Asp Phe Phe Leu Arg Ser Glu Asp Leu Phe Asn Glu Met Asn Trp Gln  
 2245 2250 2255  
 Lys Lys Leu Arg Ala Gln Pro Val Leu Tyr Trp Cys Ala Arg Asn Met  
 2260 2265 2270  
 Ser Phe Trp Ser Ser Ile Ser Phe Asn Leu Ala Val Leu Met Asn Leu  
 2275 2280 2285  
 Leu Val Ala Phe Phe Tyr Pro Phe Lys Gly Val Arg Gly Gly Thr Leu  
 2290 2295 2300

Glu Pro His Trp Ser Gly Leu Leu Trp Thr Ala Met Leu Ile Ser Leu  
 2305 2310 2315 2320  
 Ala Ile Val Ile Ala Leu Pro Lys Pro His Gly Ile Arg Ala Leu Ile  
 2325 2330 2335  
 Ala Ser Thr Ile Leu Arg Leu Ile Phe Ser Val Gly Leu Gln Pro Thr  
 2340 2345 2350  
 Leu Phe Leu Leu Gly Ala Phe Asn Val Cys Asn Lys Ile Ile Phe Leu  
 2355 2360 2365  
 Met Ser Phe Val Gly Asn Cys Gly Thr Phe Thr Arg Gly Tyr Arg Ala  
 2370 2375 2380  
 Met Val Leu Asp Val Glu Phe Leu Tyr His Leu Leu Tyr Leu Leu Ile  
 2385 2390 2395 2400  
 Cys Ala Met Gly Leu Phe Val His Glu Phe Phe Tyr Ser Leu Leu Leu  
 2405 2410 2415  
 Phe Asp Leu Val Tyr Arg Glu Glu Thr Leu Leu Asn Val Ile Lys Ser  
 2420 2425 2430  
 Val Thr Arg Asn Gly Arg Pro Ile Ile Leu Thr Ala Ala Leu Ala Leu  
 2435 2440 2445  
 Ile Leu Val Tyr Leu Phe Ser Ile Val Gly Tyr Leu Phe Phe Lys Asp  
 2450 2455 2460  
 Asp Phe Ile Leu Glu Val Asp Arg Leu Pro Asn Glu Thr Ala Gly Pro  
 2465 2470 2475 2480  
 Glu Thr Gly Glu Ser Leu Ala Asn Asp Phe Leu Tyr Ser Asp Val Cys  
 2485 2490 2495  
 Arg Val Glu Thr Gly Glu Asn Cys Thr Ser Pro Ala Pro Lys Glu Glu  
 2500 2505 2510  
 Leu Leu Pro Val Glu Glu Thr Glu Gln Asp Lys Glu His Thr Cys Glu  
 2515 2520 2525  
 Thr Leu Leu Met Cys Ile Val Thr Val Leu Ser His Gly Leu Arg Ser  
 2530 2535 2540  
 Gly Gly Gly Val Gly Asp Val Leu Arg Lys Pro Ser Lys Glu Glu Pro  
 2545 2550 2555 2560  
 Leu Phe Ala Ala Arg Val Ile Tyr Asp Leu Leu Phe Phe Phe Met Val  
 2565 2570 2575  
 Ile Ile Ile Val Leu Asn Leu Ile Phe Gly Val Ile Ile Asp Thr Phe  
 2580 2585 2590  
 Ala Asp Leu Arg Ser Glu Lys Gln Lys Lys Glu Glu Ile Leu Lys Thr  
 2595 2600 2605  
 Thr Cys Phe Ile Cys Gly Leu Glu Arg Asp Lys Phe Asp Asn Lys Thr  
 2610 2615 2620  
 Val Thr Phe Glu Glu His Ile Lys Glu Glu His Asn Met Trp His Tyr  
 2625 2630 2635 2640  
 Leu Cys Phe Ile Val Leu Val Lys Val Lys Asp Ser Thr Glu Tyr Thr  
 2645 2650 2655  
 Gly Pro Glu Ser Tyr Val Ala Glu Met Ile Arg Glu Arg Asn Leu Asp  
 2660 2665 2670  
 Trp Phe Pro Arg Met Arg Ala Met Ser Leu Val Ser Ser Asp Ser Glu  
 2675 2680 2685  
 Gly Glu Gln Asn Glu Leu Arg Asn Leu Gln Glu Lys Leu Glu Ser Thr  
 2690 2695 2700  
 Met Lys Leu Val Thr Asn Leu Ser Gly Gln Leu Ser Glu Leu Lys Asp  
 2705 2710 2715 2720  
 Gln Met Thr Glu Gln Arg Lys Gln Lys Gln Arg Ile Gly Leu Leu Gly  
 2725 2730 2735  
 His Pro Pro His Met Asn Val Asn Pro Gln Gln Pro Ala  
 2740 2745

&lt;210&gt; 5

&lt;211&gt; 2710

&lt;212&gt; PRT



<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =  
synthetic construct

<400> 5

Met	Ser	Asp	Lys	Met	Ser	Ser	Phe	Leu	His	Ile	Gly	Asp	Ile	Cys	Ser	1	5	10	15
Leu	Tyr	Ala	Glu	Gly	Ser	Thr	Asn	Gly	Phe	Ile	Ser	Thr	Leu	Gly	Leu	20	25	30	
Val	Asp	Asp	Arg	Cys	Val	Val	Gln	Pro	Glu	Ala	Gly	Asp	Leu	Asn	Asn	35	40	45	
Pro	Pro	Lys	Lys	Phe	Arg	Asp	Cys	Leu	Phe	Lys	Leu	Cys	Pro	Met	Asn	50	55	60	
Arg	Tyr	Ser	Ala	Gln	Lys	Gln	Phe	Trp	Lys	Ala	Ala	Lys	Pro	Gly	Ala	65	70	75	80
Asn	Ser	Thr	Thr	Asp	Ala	Val	Leu	Leu	Asn	Lys	Leu	His	His	Ala	Ala	85	90	95	
Asp	Leu	Glu	Lys	Lys	Gln	Asn	Glu	Thr	Glu	Asn	Arg	Lys	Leu	Leu	Gly	100	105	110	
Thr	Val	Ile	Gln	Tyr	Gly	Asn	Val	Ile	Gln	Leu	Leu	His	Leu	Lys	Ser	115	120	125	
Asn	Lys	Tyr	Leu	Thr	Val	Asn	Lys	Arg	Leu	Pro	Ala	Leu	Leu	Glu	Lys	130	135	140	
Asn	Ala	Met	Arg	Val	Thr	Leu	Asp	Glu	Ala	Gly	Asn	Glu	Gly	Ser	Trp	145	150	155	160
Phe	Tyr	Ile	Gln	Pro	Phe	Tyr	Lys	Leu	Arg	Ser	Ile	Gly	Asp	Ser	Val	165	170	175	
Val	Ile	Gly	Asp	Lys	Val	Val	Leu	Asn	Pro	Val	Asn	Ala	Gly	Gln	Pro	180	185	190	
Leu	His	Ala	Ser	Ser	His	Gln	Leu	Val	Asp	Asn	Pro	Gly	Cys	Asn	Glu	195	200	205	
Val	Asn	Ser	Val	Asn	Cys	Asn	Thr	Ser	Trp	Lys	Ile	Val	Leu	Phe	Met	210	215	220	
Lys	Trp	Ser	Asp	Asn	Lys	Asp	Asp	Ile	Leu	Lys	Gly	Gly	Asp	Val	Val	225	230	235	240
Arg	Leu	Phe	His	Ala	Glu	Gln	Glu	Lys	Phe	Leu	Thr	Cys	Asp	Glu	His	245	250	255	
Arg	Lys	Lys	Gln	His	Val	Phe	Leu	Arg	Thr	Thr	Gly	Arg	Gln	Ser	Ala	260	265	270	
Thr	Ser	Ala	Thr	Ser	Ser	Lys	Ala	Leu	Trp	Glu	Val	Glu	Val	Val	Gln	275	280	285	
His	Asp	Pro	Cys	Arg	Gly	Gly	Ala	Gly	Tyr	Trp	Asn	Ser	Leu	Phe	Arg	290	295	300	
Phe	Lys	His	Leu	Ala	Thr	Gly	His	Tyr	Leu	Ala	Ala	Glu	Val	Asp	Pro	305	310	315	320
Asp	Phe	Glu	Glu	Glu	Cys	Leu	Glu	Phe	Gln	Pro	Ser	Val	Asp	Pro	Asp	325	330	335	
Gln	Asp	Ala	Ser	Arg	Ser	Arg	Leu	Arg	Asn	Ala	Gln	Glu	Lys	Met	Val	340	345	350	
Tyr	Ser	Leu	Val	Ser	Val	Pro	Glu	Gly	Asn	Asp	Ile	Ser	Ser	Ile	Phe	355	360	365	
Glu	Leu	Asp	Pro	Thr	Thr	Leu	Arg	Gly	Gly	Asp	Ser	Leu	Val	Pro	Arg	370	375	380	
Asn	Ser	Tyr	Val	Arg	Leu	Arg	His	Leu	Cys	Thr	Asn	Thr	Trp	Val	His	385	390	395	400
Ser	Thr	Asn	Ile	Pro	Ile	Asp	Lys	Glu	Glu	Glu	Lys	Pro	Val	Met	Leu	405	410	415	
Lys	Ile	Gly	Thr	Ser	Pro	Leu	Lys	Glu	Asp	Lys	Glu	Ala	Phe	Ala	Ile	420	425	430	

Val	Pro	Val	Ser	Pro	Ala	Glu	Val	Arg	Asp	Leu	Asp	Phe	Ala	Asn	Asp	435	440	445
Ala	Ser	Lys	Val	Leu	Gly	Ser	Ile	Ala	Gly	Lys	Leu	Glu	Lys	Gly	Thr	450	455	460
Ile	Thr	Gln	Asn	Glu	Arg	Arg	Ser	Val	Thr	Lys	Leu	Leu	Glu	Asp	Leu	465	470	475
Val	Tyr	Phe	Val	Thr	Gly	Gly	Thr	Asn	Ser	Gly	Gln	Asp	Val	Leu	Glu	485	490	495
Val	Val	Phe	Ser	Lys	Pro	Asn	Arg	Glu	Arg	Gln	Lys	Leu	Met	Arg	Glu	500	505	510
Gln	Asn	Ile	Leu	Lys	Gln	Ile	Phe	Lys	Leu	Leu	Gln	Ala	Pro	Phe	Thr	515	520	525
Asp	Cys	Gly	Asp	Gly	Pro	Met	Leu	Arg	Leu	Glu	Glu	Leu	Gly	Asp	Gln	530	535	540
Arg	His	Ala	Pro	Phe	Arg	His	Ile	Cys	Arg	Leu	Cys	Tyr	Arg	Val	Leu	545	550	555
Arg	His	Ser	Gln	Gln	Asp	Tyr	Arg	Lys	Asn	Gln	Glu	Tyr	Ile	Ala	Lys	565	570	575
Gln	Phe	Gly	Phe	Met	Gln	Lys	Gln	Ile	Gly	Tyr	Asp	Val	Leu	Ala	Glu	580	585	590
Asp	Thr	Ile	Thr	Ala	Leu	Leu	His	Asn	Asn	Arg	Lys	Leu	Leu	Glu	Lys	595	600	605
His	Ile	Thr	Ala	Ala	Glu	Ile	Asp	Thr	Phe	Val	Ser	Leu	Val	Arg	Lys	610	615	620
Asn	Arg	Glu	Pro	Arg	Phe	Leu	Asp	Tyr	Leu	Ser	Asp	Leu	Cys	Val	Ser	625	630	635
Met	Asn	Lys	Ser	Ile	Pro	Val	Thr	Gln	Glu	Leu	Ile	Cys	Lys	Ala	Val	645	650	655
Leu	Asn	Pro	Thr	Asn	Ala	Asp	Ile	Leu	Ile	Glu	Thr	Lys	Leu	Val	Leu	660	665	670
Ser	Arg	Phe	Glu	Phe	Glu	Gly	Val	Ser	Thr	Gly	Glu	Asn	Ala	Leu	Glu	675	680	685
Ala	Gly	Glu	Asp	Glu	Glu	Glu	Val	Trp	Leu	Phe	Trp	Arg	Asp	Ser	Asn	690	695	700
Lys	Glu	Ile	Arg	Ser	Lys	Ser	Val	Arg	Glu	Leu	Ala	Gln	Asp	Ala	Lys	705	710	715
Glu	Gly	Gln	Lys	Glu	Asp	Arg	Asp	Val	Leu	Ser	Tyr	Tyr	Arg	Tyr	Gln	725	730	735
Leu	Asn	Leu	Phe	Ala	Arg	Met	Cys	Leu	Asp	Arg	Gln	Tyr	Leu	Ala	Ile	740	745	750
Asn	Glu	Ile	Ser	Gly	Gln	Leu	Asp	Val	Asp	Leu	Ile	Leu	Arg	Cys	Met	755	760	765
Ser	Asp	Glu	Asn	Leu	Pro	Tyr	Asp	Leu	Arg	Ala	Ser	Phe	Cys	Arg	Leu	770	775	780
Met	Leu	His	Met	His	Val	Asp	Arg	Asp	Pro	Gln	Glu	Gln	Val	Thr	Pro	785	790	795
Val	Lys	Tyr	Ala	Arg	Leu	Trp	Ser	Glu	Ile	Pro	Ser	Glu	Ile	Ala	Ile	805	810	815
Asp	Asp	Tyr	Asp	Ser	Ser	Gly	Ala	Ser	Lys	Asp	Glu	Ile	Lys	Glu	Arg	820	825	830
Phe	Ala	Gln	Thr	Met	Glu	Phe	Val	Glu	Glu	Tyr	Leu	Arg	Asp	Val	Val	835	840	845
Cys	Gln	Arg	Phe	Pro	Phe	Ser	Asp	Lys	Glu	Lys	Asn	Lys	Leu	Thr	Phe	850	855	860
Glu	Val	Val	Asn	Leu	Ala	Arg	Asn	Leu	Ile	Tyr	Phe	Gly	Phe	Tyr	Asn	865	870	875
Phe	Ser	Asp	Leu	Leu	Arg	Leu	Thr	Lys	Ile	Leu	Leu	Ala	Ile	Leu	Asp	885	890	895
Cys	Val	His	Val	Thr	Thr	Ile	Phe	Pro	Ile	Ser	Lys	Met	Thr	Lys	Gly	900	905	910

Glu	Glu	Asn	Lys	Gly	Ser	Asn	Val	Met	Arg	Ser	Ile	His	Gly	Val	Gly		
		915					920					925					
Glu	Leu	Met	Thr	Gln	Val	Val	Leu	Arg	Gly	Gly	Gly	Phe	Leu	Pro	Met		
		930					935				940						
Thr	Pro	Met	Ala	Ala	Ala	Pro	Glu	Gly	Asn	Val	Lys	Gln	Ala	Glu	Pro		
945					950				955						960		
Glu	Lys	Glu	Asp	Ile	Met	Val	Met	Asp	Thr	Lys	Leu	Lys	Ile	Ile	Glu		
			965					970						975			
Ile	Leu	Gln	Phe	Ile	Leu	Asn	Val	Arg	Leu	Asp	Tyr	Arg	Ile	Ser	Cys		
			980					985					990				
Leu	Leu	Cys	Ile	Phe	Lys	Arg	Glu	Phe	Asp	Glu	Ser	Asn	Ser	Gln	Ser		
		995					1000					1005					
Ser	Glu	Thr	Ser	Ser	Gly	Asn	Ser	Ser	Gln	Glu	Gly	Pro	Ser	Asn	Val		
		1010				1015					1020						
Pro	Gly	Ala	Leu	Asp	Phe	Glu	His	Ile	Glu	Glu	Gln	Ala	Glu	Gly	Ile		
1025					1030				1035						1040		
Phe	Gly	Gly	Ser	Glu	Glu	Asn	Thr	Pro	Leu	Asp	Leu	Asp	Asp	His	Gly		
			1045					1050						1055			
Gly	Arg	Thr	Phe	Leu	Arg	Val	Leu	Leu	His	Leu	Thr	Met	His	Asp	Tyr		
			1060				1065						1070				
Pro	Pro	Leu	Val	Ser	Gly	Ala	Leu	Gln	Leu	Leu	Phe	Arg	His	Phe	Ser		
		1075				1080						1085					
Gln	Arg	Gln	Glu	Val	Leu	Gln	Ala	Phe	Lys	Gln	Val	Gln	Leu	Leu	Val		
		1090				1095					1100						
Thr	Ser	Gln	Asp	Val	Asp	Asn	Tyr	Lys	Gln	Ile	Lys	Gln	Asp	Leu	Asp		
1105				1110					1115						1120		
Gln	Leu	Arg	Ser	Ile	Val	Glu	Lys	Ser	Glu	Leu	Trp	Val	Tyr	Lys	Gly		
			1125					1130						1135			
Gln	Gly	Pro	Asp	Glu	Pro	Met	Asp	Gly	Ala	Ser	Gly	Glu	Asn	Glu	His		
			1140				1145						1150				
Lys	Lys	Thr	Glu	Glu	Gly	Thr	Ser	Lys	Pro	Leu	Lys	His	Glu	Ser	Thr		
		1155				1160						1165					
Ser	Ser	Tyr	Asn	Tyr	Arg	Val	Val	Lys	Glu	Ile	Leu	Ile	Arg	Leu	Ser		
		1170			1175						1180						
Lys	Leu	Cys	Val	Gln	Glu	Ser	Ala	Ser	Val	Arg	Lys	Ser	Arg	Lys	Gln		
1185				1190					1195						1200		
Gln	Gln	Arg	Leu	Leu	Arg	Asn	Met	Gly	Ala	His	Ala	Val	Val	Leu	Glu		
			1205					1210						1215			
Leu	Leu	Gln	Ile	Pro	Tyr	Glu	Lys	Ala	Glu	Asp	Thr	Lys	Met	Gln	Glu		
			1220					1225					1230				
Ile	Met	Arg	Leu	Ala	His	Glu	Phe	Leu	Gln	Asn	Phe	Cys	Ala	Gly	Asn		
		1235				1240						1245					
Gln	Gln	Asn	Gln	Ala	Leu	Leu	His	Lys	His	Ile	Asn	Leu	Phe	Leu	Asn		
		1250			1255						1260						
Pro	Gly	Ile	Leu	Glu	Ala	Val	Thr	Met	Gln	His	Ile	Phe	Met	Asn	Asn		
1265				1270					1275						1280		
Phe	Gln	Leu	Cys	Ser	Glu	Ile	Asn	Glu	Arg	Val	Val	Gln	His	Phe	Val		
			1285					1290						1295			
His	Cys	Ile	Glu	Thr	His	Gly	Arg	Asn	Val	Gln	Tyr	Ile	Lys	Phe	Leu		
			1300				1305						1310				
Gln	Thr	Ile	Val	Lys	Ala	Glu	Gly	Lys	Phe	Ile	Lys	Lys	Cys	Gln	Asp		
		1315				1320						1325					
Met	Val	Met	Ala	Glu	Leu	Val	Asn	Ser	Gly	Glu	Asp	Val	Leu	Val	Phe		
		1330			1335						1340						
Tyr	Asn	Asp	Arg	Ala	Ser	Phe	Gln	Thr	Leu	Ile	Gln	Met	Met	Arg	Ser		
1345				1350					1355						1360		
Glu	Arg	Asp	Arg	Met	Asp	Glu	Asn	Ser	Pro	Leu	Phe	Met	Tyr	His	Ile		
			1365					1370					1375				
His	Leu	Val	Glu	Leu	Leu	Ala	Val	Cys	Thr	Glu	Gly	Lys	Asn	Val	Tyr		
			1380					1385					1390				

Thr Glu Ile Lys Cys Asn Ser Leu Leu Pro Leu Asp Asp Ile Val Arg  
 1395 1400 1405  
 Val Val Thr His Glu Asp Cys Ile Pro Glu Val Lys Ile Ala Tyr Ile  
 1410 1415 1420  
 Asn Phe Leu Asn His Cys Tyr Val Asp Thr Glu Val Glu Met Lys Glu  
 1425 1430 1435 1440  
 Ile Tyr Thr Ser Asn His Met Trp Lys Leu Phe Glu Asn Phe Leu Val  
 1445 1450 1455  
 Asp Ile Cys Arg Ala Cys Asn Asn Thr Ser Asp Arg Lys His Ala Asp  
 1460 1465 1470  
 Ser Val Leu Glu Lys Tyr Val Thr Glu Ile Val Met Ser Ile Val Thr  
 1475 1480 1485  
 Thr Phe Phe Ser Ser Pro Phe Ser Asp Gln Ser Thr Thr Leu Gln Thr  
 1490 1495 1500  
 Arg Gln Pro Val Phe Val Gln Leu Leu Gln Gly Val Phe Arg Val Tyr  
 1505 1510 1515 1520  
 His Cys Asn Trp Leu Met Pro Ser Gln Lys Ala Ser Val Glu Ser Cys  
 1525 1530 1535  
 Ile Arg Val Leu Ser Asp Val Ala Lys Ser Arg Ala Ile Ala Ile Pro  
 1540 1545 1550  
 Val Asp Leu Asp Ser Gln Val Asn Asn Leu Phe Leu Lys Ser His Asn  
 1555 1560 1565  
 Ile Val Gln Lys Thr Ala Met Asn Trp Arg Leu Ser Ala Arg Asn Ala  
 1570 1575 1580  
 Ala Arg Arg Asp Ser Val Leu Ala Ala Ser Arg Asp Tyr Arg Asn Ile  
 1585 1590 1595 1600  
 Ile Glu Arg Leu Gln Asp Ile Val Ser Ala Leu Glu Asp Arg Leu Arg  
 1605 1610 1615  
 Pro Leu Val Gln Ala Glu Leu Ser Val Leu Val Asp Val Leu His Arg  
 1620 1625 1630  
 Pro Glu Leu Leu Phe Pro Glu Asn Thr Asp Ala Arg Arg Lys Cys Glu  
 1635 1640 1645  
 Ser Gly Gly Phe Ile Cys Lys Leu Ile Lys His Thr Lys Gln Leu Leu  
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 Glu Glu Asn Glu Glu Lys Leu Cys Ile Lys Val Leu Gln Thr Leu Arg  
 1665 1670 1675 1680  
 Glu Met Met Thr Lys Asp Arg Gly Tyr Gly Glu Lys Gly Glu Ala Leu  
 1685 1690 1695  
 Arg Gln Ile Leu Val Asn Arg Tyr Tyr Gly Asn Ile Arg Pro Ser Gly  
 1700 1705 1710  
 Arg Arg Glu Glu Leu Thr Ser Phe Gly Asn Gly Pro Leu Ser Pro Gly  
 1715 1720 1725  
 Gly Pro Ser Lys Pro Gly Gly Gly Gly Gly Gly Pro Gly Ser Gly Ser  
 1730 1735 1740  
 Thr Ser Arg Gly Glu Met Ser Leu Ala Glu Val Gln Cys His Leu Asp  
 1745 1750 1755 1760  
 Lys Glu Gly Ala Ser Asn Leu Val Ile Asp Leu Ile Met Asn Ala Ser  
 1765 1770 1775  
 Ser Asp Arg Val Phe His Glu Ser Ile Leu Leu Ala Ile Ala Leu Leu  
 1780 1785 1790  
 Glu Gly Gly Asn Thr Thr Ile Gln His Ser Phe Phe Cys Arg Leu Thr  
 1795 1800 1805  
 Glu Asp Lys Lys Ser Glu Lys Phe Phe Lys Val Phe Tyr Asp Arg Met  
 1810 1815 1820  
 Lys Val Ala Gln Gln Glu Ile Lys Ala Thr Val Thr Val Asn Thr Ser  
 1825 1830 1835 1840  
 Asp Leu Gly Asn Lys Lys Lys Asp Asp Glu Val Asp Arg Asp Ala Pro  
 1845 1850 1855  
 Ser Arg Lys Lys Ala Lys Glu Pro Thr Thr Gln Ile Thr Glu Glu Val  
 1860 1865 1870

Arg Asp Gln Leu Leu Glu Ala Ser Ala Ala Thr Arg Lys Ala Phe Thr  
 1875 1880 1885  
 Thr Phe Arg Arg Glu Ala Asp Pro Asp Asp His Tyr Gln Ser Gly Glu  
 1890 1895 1900  
 Gly Thr Gln Ala Thr Thr Asp Lys Ala Lys Asp Asp Leu Glu Met Ser  
 1905 1910 1915 1920  
 Ala Val Ile Thr Ile Met Gln Pro Ile Leu Arg Phe Leu Gln Leu Leu  
 1925 1930 1935  
 Cys Glu Asn His Asn Arg Asp Leu Gln Asn Phe Leu Arg Cys Gln Asn  
 1940 1945 1950  
 Asn Lys Thr Asn Tyr Asn Leu Val Cys Glu Thr Leu Gln Phe Leu Asp  
 1955 1960 1965  
 Cys Ile Cys Gly Ser Thr Thr Gly Gly Leu Gly Leu Leu Gly Leu Tyr  
 1970 1975 1980  
 Ile Asn Glu Lys Asn Val Ala Leu Ile Asn Gln Thr Leu Glu Ser Leu  
 1985 1990 1995 2000  
 Thr Glu Tyr Cys Gln Gly Pro Cys His Glu Asn Gln Asn Cys Ile Ala  
 2005 2010 2015  
 Thr His Glu Ser Asn Gly Ile Asp Ile Ile Thr Ala Leu Ile Leu Asn  
 2020 2025 2030  
 Asp Ile Asn Pro Leu Gly Lys Lys Arg Met Asp Leu Val Leu Glu Leu  
 2035 2040 2045  
 Lys Asn Asn Ala Ser Lys Leu Leu Leu Ala Ile Met Glu Ser Arg His  
 2050 2055 2060  
 Asp Ser Glu Asn Ala Glu Arg Ile Leu Tyr Asn Met Arg Pro Lys Glu  
 2065 2070 2075 2080  
 Leu Val Glu Val Ile Lys Lys Ala Tyr Met Gln Gly Glu Val Glu Phe  
 2085 2090 2095  
 Glu Asp Gly Glu Asn Gly Glu Asp Gly Ala Ala Ser Pro Arg Asn Val  
 2100 2105 2110  
 Gly His Asn Ile Tyr Ile Leu Ala His Gln Leu Ala Arg His Asn Lys  
 2115 2120 2125  
 Glu Leu Gln Thr Met Leu Lys Pro Gly Gly Gln Val Asp Gly Asp Glu  
 2130 2135 2140  
 Ala Leu Glu Phe Tyr Ala Lys His Thr Ala Gln Ile Glu Ile Val Arg  
 2145 2150 2155 2160  
 Leu Asp Arg Thr Met Glu Gln Ile Val Phe Pro Val Pro Ser Ile Cys  
 2165 2170 2175  
 Glu Phe Leu Thr Lys Glu Ser Lys Leu Arg Ile Tyr Tyr Thr Thr Glu  
 2180 2185 2190  
 Arg Asp Glu Gln Gly Ser Lys Ile Asn Asp Phe Phe Leu Arg Ser Glu  
 2195 2200 2205  
 Asp Leu Phe Asn Glu Met Asn Trp Gln Lys Lys Leu Arg Ala Gln Pro  
 2210 2215 2220  
 Val Leu Tyr Trp Cys Ala Arg Asn Met Ser Phe Trp Ser Ser Ile Ser  
 2225 2230 2235 2240  
 Phe Asn Leu Ala Val Leu Met Asn Leu Leu Val Ala Phe Phe Tyr Pro  
 2245 2250 2255  
 Phe Lys Gly Val Arg Gly Gly Thr Leu Glu Pro His Trp Ser Gly Leu  
 2260 2265 2270  
 Leu Trp Thr Ala Met Leu Ile Ser Leu Ala Ile Val Ile Ala Leu Pro  
 2275 2280 2285  
 Lys Pro His Gly Ile Arg Ala Leu Ile Ala Ser Thr Ile Leu Arg Leu  
 2290 2295 2300  
 Ile Phe Ser Val Gly Leu Gln Pro Thr Leu Phe Leu Leu Gly Ala Phe  
 2305 2310 2315 2320  
 Asn Val Cys Asn Lys Ile Ile Phe Leu Met Ser Phe Val Gly Asn Cys  
 2325 2330 2335  
 Gly Thr Phe Thr Arg Gly Tyr Arg Ala Met Val Leu Asp Val Glu Phe  
 2340 2345 2350

Leu Tyr His Leu Leu Tyr Leu Leu Ile Cys Ala Met Gly Leu Phe Val  
 2355 2360 2365  
 His Glu Phe Phe Tyr Ser Leu Leu Leu Phe Asp Leu Val Tyr Arg Glu  
 2370 2375 2380  
 Glu Thr Leu Leu Asn Val Ile Lys Ser Val Thr Arg Asn Gly Arg Pro  
 2385 2390 2395 2400  
 Ile Ile Leu Thr Ala Ala Leu Ala Leu Ile Leu Val Tyr Leu Phe Ser  
 2405 2410 2415  
 Ile Val Gly Tyr Leu Phe Phe Lys Asp Asp Phe Ile Leu Glu Val Asp  
 2420 2425 2430  
 Arg Leu Pro Asn Glu Thr Ala Gly Pro Glu Thr Gly Glu Ser Leu Ala  
 2435 2440 2445  
 Asn Asp Phe Leu Tyr Ser Asp Val Cys Arg Val Glu Thr Gly Glu Asn  
 2450 2455 2460  
 Cys Thr Ser Pro Ala Pro Lys Glu Glu Leu Leu Pro Val Glu Glu Thr  
 2465 2470 2475 2480  
 Glu Gln Asp Lys Glu His Thr Cys Glu Thr Leu Leu Met Cys Ile Val  
 2485 2490 2495  
 Thr Val Leu Ser His Gly Leu Arg Ser Gly Gly Gly Val Gly Asp Val  
 2500 2505 2510  
 Leu Arg Lys Pro Ser Lys Glu Glu Pro Leu Phe Ala Ala Arg Val Ile  
 2515 2520 2525  
 Tyr Asp Leu Leu Phe Phe Phe Met Val Ile Ile Ile Val Leu Asn Leu  
 2530 2535 2540  
 Ile Phe Gly Val Ile Ile Asp Thr Phe Ala Asp Leu Arg Ser Glu Lys  
 2545 2550 2555 2560  
 Gln Lys Lys Glu Glu Ile Leu Lys Thr Thr Cys Phe Ile Cys Gly Leu  
 2565 2570 2575  
 Glu Arg Asp Lys Phe Asp Asn Lys Thr Val Thr Phe Glu Glu His Ile  
 2580 2585 2590  
 Lys Glu Glu His Asn Met Trp His Tyr Leu Cys Phe Ile Val Leu Val  
 2595 2600 2605  
 Lys Val Lys Asp Ser Thr Glu Tyr Thr Gly Pro Glu Ser Tyr Val Ala  
 2610 2615 2620  
 Glu Met Ile Arg Glu Arg Asn Leu Asp Trp Phe Pro Arg Met Arg Ala  
 2625 2630 2635 2640  
 Met Ser Leu Val Ser Ser Asp Ser Glu Gly Glu Gln Asn Glu Leu Arg  
 2645 2650 2655  
 Asn Leu Gln Glu Lys Leu Glu Ser Thr Met Lys Leu Val Thr Asn Leu  
 2660 2665 2670  
 Ser Gly Gln Leu Ser Glu Leu Lys Asp Gln Met Thr Glu Gln Arg Lys  
 2675 2680 2685  
 Gln Lys Gln Arg Ile Gly Leu Leu Gly His Pro Pro His Met Asn Val  
 2690 2695 2700  
 Asn Pro Gln Gln Pro Ala  
 2705 2710

&lt;210&gt; 6

&lt;211&gt; 2749

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

 <223> Description of Artificial Sequence:/note =  
 synthetic construct

&lt;400&gt; 6

 Met Ser Asp Lys Met Ser Ser Phe Leu His Ile Gly Asp Ile Cys Ser  
 1 5 10 15

Leu Tyr Ala Glu Gly Ser Thr Asn Gly Phe Ile Ser Thr Leu Gly Leu  
 20 25 30  
 Val Asp Asp Arg Cys Val Val Gln Pro Glu Ala Gly Asp Leu Asn Asn  
 35 40 45  
 Pro Pro Lys Lys Phe Arg Asp Cys Leu Phe Lys Leu Cys Pro Met Asn  
 50 55 60  
 Arg Tyr Ser Ala Gln Lys Gln Phe Trp Lys Ala Ala Lys Pro Gly Ala  
 65 70 75 80  
 Asn Ser Thr Thr Asp Ala Val Leu Leu Asn Lys Leu His His Ala Ala  
 85 90 95  
 Asp Leu Glu Lys Lys Gln Asn Glu Thr Glu Asn Arg Lys Leu Leu Gly  
 100 105 110  
 Thr Val Ile Gln Tyr Gly Asn Val Ile Gln Leu Leu His Leu Lys Ser  
 115 120 125  
 Asn Lys Tyr Leu Thr Val Asn Lys Arg Leu Pro Ala Leu Leu Glu Lys  
 130 135 140  
 Asn Ala Met Arg Val Thr Leu Asp Glu Ala Gly Asn Glu Gly Ser Trp  
 145 150 155 160  
 Phe Tyr Ile Gln Pro Phe Tyr Lys Leu Arg Ser Ile Gly Asp Ser Val  
 165 170 175  
 Val Ile Gly Asp Lys Val Val Leu Asn Pro Val Asn Ala Gly Gln Pro  
 180 185 190  
 Leu His Ala Ser Ser His Gln Leu Val Asp Asn Pro Gly Cys Asn Glu  
 195 200 205  
 Val Asn Ser Val Asn Cys Asn Thr Ser Trp Lys Ile Val Leu Phe Met  
 210 215 220  
 Lys Trp Ser Asp Asn Lys Asp Asp Ile Leu Lys Gly Gly Asp Val Val  
 225 230 235 240  
 Arg Leu Phe His Ala Glu Gln Glu Lys Phe Leu Thr Cys Asp Glu His  
 245 250 255  
 Arg Lys Lys Gln His Val Phe Leu Arg Thr Thr Gly Arg Gln Ser Ala  
 260 265 270  
 Thr Ser Ala Thr Ser Ser Lys Ala Leu Trp Glu Val Glu Val Val Gln  
 275 280 285  
 His Asp Pro Cys Arg Gly Gly Ala Gly Tyr Trp Asn Ser Leu Phe Arg  
 290 295 300  
 Phe Lys His Leu Ala Thr Gly His Tyr Leu Ala Glu Val Asp Pro  
 305 310 315 320  
 Asp Phe Glu Glu Glu Cys Leu Glu Phe Gln Pro Ser Val Asp Pro Asp  
 325 330 335  
 Gln Asp Ala Ser Arg Ser Arg Leu Arg Asn Ala Gln Glu Lys Met Val  
 340 345 350  
 Tyr Ser Leu Val Ser Val Pro Glu Gly Asn Asp Ile Ser Ser Ile Phe  
 355 360 365  
 Glu Leu Asp Pro Thr Thr Leu Arg Gly Gly Asp Ser Leu Val Pro Arg  
 370 375 380  
 Asn Ser Tyr Val Arg Leu Arg His Leu Cys Thr Asn Thr Trp Val His  
 385 390 395 400  
 Ser Thr Asn Ile Pro Ile Asp Lys Glu Glu Glu Lys Pro Val Met Leu  
 405 410 415  
 Lys Ile Gly Thr Ser Pro Leu Lys Glu Asp Lys Glu Ala Phe Ala Ile  
 420 425 430  
 Val Pro Val Ser Pro Ala Glu Val Arg Asp Leu Asp Phe Ala Asn Asp  
 435 440 445  
 Ala Ser Lys Val Leu Gly Ser Ile Ala Gly Lys Leu Glu Lys Gly Thr  
 450 455 460  
 Ile Thr Gln Asn Glu Arg Arg Ser Val Thr Lys Leu Leu Glu Asp Leu  
 465 470 475 480  
 Val Tyr Phe Val Thr Gly Gly Thr Asn Ser Gly Gln Asp Val Leu Glu  
 485 490 495

Val	Val	Phe	Ser 500	Lys	Pro	Asn	Arg	Glu 505	Arg	Gln	Lys	Leu 510	Met	Arg	Glu
Gln	Asn	Ile 515	Leu	Lys	Gln	Ile	Phe 520	Lys	Leu	Leu	Gln	Ala 525	Pro	Phe	Thr
Asp	Cys 530	Gly	Asp	Gly	Pro	Met 535	Leu	Arg	Leu	Glu	Glu 540	Leu	Gly	Asp	Gln
Arg 545	His	Ala	Pro	Phe	Arg 550	His	Ile	Cys	Arg	Leu 555	Cys	Tyr	Arg	Val	Leu 560
Arg	His	Ser	Gln	Gln	Asp 565	Tyr	Arg	Lys	Asn 570	Gln	Glu	Tyr	Ile	Ala 575	Lys
Gln	Phe	Gly 580	Phe	Met	Gln	Lys	Gln 585	Ile	Gly	Tyr	Asp	Val	Leu 590	Ala	Glu
Asp	Thr 595	Ile	Thr	Ala	Leu	Leu	His 600	Asn	Asn	Arg	Lys	Leu 605	Leu	Glu	Lys
His 610	Ile	Thr	Ala	Ala	Glu	Ile 615	Asp	Thr	Phe	Val 620	Ser	Leu	Val	Arg	Lys
Asn 625	Arg	Glu	Pro	Arg	Phe 630	Leu	Asp	Tyr	Leu	Ser 635	Asp	Leu	Cys	Val	Ser 640
Met	Asn	Lys	Ser	Ile 645	Pro	Val	Thr	Gln	Glu 650	Leu	Ile	Cys	Lys	Ala 655	Val
Leu	Asn	Pro 660	Thr	Asn	Ala	Asp	Ile	Leu 665	Ile	Glu	Thr	Lys	Leu 670	Val	Leu
Ser	Arg 675	Phe	Glu	Phe	Glu	Gly	Val 680	Ser	Thr	Gly	Glu	Asn 685	Ala	Leu	Glu
Ala 690	Gly	Glu	Asp	Glu	Glu	Glu 695	Val	Trp	Leu	Phe 700	Trp	Arg	Asp	Ser	Asn
Lys 705	Glu	Ile	Arg	Ser	Lys 710	Ser	Val	Arg	Glu	Leu 715	Ala	Gln	Asp	Ala	Lys 720
Glu	Gly	Gln	Lys	Glu 725	Asp	Arg	Asp	Val 730	Leu	Ser	Tyr	Tyr	Arg	Tyr 735	Gln
Leu	Asn	Leu 740	Phe	Ala	Arg	Met	Cys 745	Leu	Asp	Arg	Gln	Tyr 750	Leu	Ala	Ile
Asn	Glu 755	Ile	Ser	Gly	Gln	Leu	Asp 760	Val	Asp	Leu	Ile	Leu 765	Arg	Cys	Met
Ser 770	Asp	Glu	Asn	Leu	Pro	Tyr 775	Asp	Leu	Arg	Ala	Ser 780	Phe	Cys	Arg	Leu
Met 785	Leu	His	Met	His 790	Val	Asp	Arg	Asp	Pro	Gln 795	Glu	Gln	Val	Thr	Pro 800
Val	Lys	Tyr	Ala 805	Arg	Leu	Trp	Ser	Glu	Ile 810	Pro	Ser	Glu	Ile	Ala 815	Ile
Asp	Asp	Tyr 820	Asp	Ser	Ser	Gly	Ala 825	Ser	Lys	Asp	Glu	Ile 830	Lys	Glu	Arg
Phe	Ala 835	Gln	Thr	Met	Glu	Phe 840	Val	Glu	Glu	Tyr	Leu 845	Arg	Asp	Val	Val
Cys 850	Gln	Arg	Phe	Pro	Phe 855	Ser	Asp	Lys	Glu	Lys 860	Asn	Lys	Leu	Thr	Phe
Glu 865	Val	Val	Asn	Leu	Ala 870	Arg	Asn	Leu	Ile 875	Tyr	Phe	Gly	Phe	Tyr	Asn 880
Phe	Ser	Asp	Leu 885	Leu	Arg	Leu	Thr	Lys 890	Leu	Leu	Ala	Ile 895	Leu	Asp	
Cys	Val 900	His	Val	Thr	Thr	Ile	Phe 905	Pro	Ile	Ser	Lys	Met 910	Thr	Lys	Gly
Glu	Glu 915	Asn	Lys	Gly	Ser	Asn 920	Val	Met	Arg	Ser	Ile 925	His	Gly	Val	Gly
Glu	Leu 930	Met	Thr	Gln	Val	Val 935	Leu	Arg	Gly	Gly 940	Gly	Phe	Leu	Pro	Met
Thr 945	Pro	Met	Ala	Ala	Ala 950	Pro	Glu	Gly	Asn 955	Val	Lys	Gln	Ala	Glu	Pro 960
Glu	Lys	Glu	Asp 965	Ile	Met	Val	Met	Asp 970	Thr	Lys	Leu	Lys 975	Ile	Ile	Glu



Ile Leu Gln Phe Ile Leu Asn Val Arg Leu Asp Tyr Arg Ile Ser Cys  
 980 985 990  
 Leu Leu Cys Ile Phe Lys Arg Glu Phe Asp Glu Ser Asn Ser Gln Ser  
 995 1000 1005  
 Ser Glu Thr Ser Ser Gly Asn Ser Ser Gln Glu Gly Pro Ser Asn Val  
 1010 1015 1020  
 Pro Gly Ala Leu Asp Phe Glu His Ile Glu Glu Gln Ala Glu Gly Ile  
 1025 1030 1035 1040  
 Phe Gly Gly Ser Glu Glu Asn Thr Pro Leu Asp Leu Asp Asp His Gly  
 1045 1050 1055  
 Gly Arg Thr Phe Leu Arg Val Leu Leu His Leu Thr Met His Asp Tyr  
 1060 1065 1070  
 Pro Pro Leu Val Ser Gly Ala Leu Gln Leu Leu Phe Arg His Phe Ser  
 1075 1080 1085  
 Gln Arg Gln Glu Val Leu Gln Ala Phe Lys Gln Val Gln Leu Leu Val  
 1090 1095 1100  
 Thr Ser Gln Asp Val Asp Asn Tyr Lys Gln Ile Lys Gln Asp Leu Asp  
 1105 1110 1115 1120  
 Gln Leu Arg Ser Ile Val Glu Lys Ser Glu Leu Trp Val Tyr Lys Gly  
 1125 1130 1135  
 Gln Gly Pro Asp Glu Pro Met Asp Gly Ala Ser Gly Glu Asn Glu His  
 1140 1145 1150  
 Lys Lys Thr Glu Glu Gly Thr Ser Lys Pro Leu Lys His Glu Ser Thr  
 1155 1160 1165  
 Ser Ser Tyr Asn Tyr Arg Val Val Lys Glu Ile Leu Ile Arg Leu Ser  
 1170 1175 1180  
 Lys Leu Cys Val Gln Glu Ser Ala Ser Val Arg Lys Ser Arg Lys Gln  
 1185 1190 1195 1200  
 Gln Gln Arg Leu Leu Arg Asn Met Gly Ala His Ala Val Val Leu Glu  
 1205 1210 1215  
 Leu Leu Gln Ile Pro Tyr Glu Lys Ala Glu Asp Thr Lys Met Gln Glu  
 1220 1225 1230  
 Ile Met Arg Leu Ala His Glu Phe Leu Gln Asn Phe Cys Ala Gly Asn  
 1235 1240 1245  
 Gln Gln Asn Gln Ala Leu Leu His Lys His Ile Asn Leu Phe Leu Asn  
 1250 1255 1260  
 Pro Gly Ile Leu Glu Ala Val Thr Met Gln His Ile Phe Met Asn Asn  
 1265 1270 1275 1280  
 Phe Gln Leu Cys Ser Glu Ile Asn Glu Arg Val Val Gln His Phe Val  
 1285 1290 1295  
 His Cys Ile Glu Thr His Gly Arg Asn Val Gln Tyr Ile Lys Phe Leu  
 1300 1305 1310  
 Gln Thr Ile Val Lys Ala Glu Gly Lys Phe Ile Lys Lys Cys Gln Asp  
 1315 1320 1325  
 Met Val Met Ala Glu Leu Val Asn Ser Gly Glu Asp Val Leu Val Phe  
 1330 1335 1340  
 Tyr Asn Asp Arg Ala Ser Phe Gln Thr Leu Ile Gln Met Met Arg Ser  
 1345 1350 1355 1360  
 Glu Arg Asp Arg Met Asp Glu Asn Ser Pro Leu Phe Met Tyr His Ile  
 1365 1370 1375  
 His Leu Val Glu Leu Leu Ala Val Cys Thr Glu Gly Lys Asn Val Tyr  
 1380 1385 1390  
 Thr Glu Ile Lys Cys Asn Ser Leu Leu Pro Leu Asp Asp Ile Val Arg  
 1395 1400 1405  
 Val Val Thr His Glu Asp Cys Ile Pro Glu Val Lys Ile Ala Tyr Ile  
 1410 1415 1420  
 Asn Phe Leu Asn His Cys Tyr Val Asp Thr Glu Val Glu Met Lys Glu  
 1425 1430 1435 1440  
 Ile Tyr Thr Ser Asn His Met Trp Lys Leu Phe Glu Asn Phe Leu Val  
 1445 1450 1455

Asp Ile Cys Arg Ala Cys Asn Asn Thr Ser Asp Arg Lys His Ala Asp  
 1460 1465 1470  
 Ser Val Leu Glu Lys Tyr Val Thr Glu Ile Val Met Ser Ile Val Thr  
 1475 1480 1485  
 Thr Phe Phe Ser Ser Pro Phe Ser Asp Gln Ser Thr Thr Leu Gln Thr  
 1490 1495 1500  
 Arg Gln Pro Val Phe Val Gln Leu Leu Gln Gly Val Phe Arg Val Tyr  
 1505 1510 1515 1520  
 His Cys Asn Trp Leu Met Pro Ser Gln Lys Ala Ser Val Glu Ser Cys  
 1525 1530 1535  
 Ile Arg Val Leu Ser Asp Val Ala Lys Ser Arg Ala Ile Ala Ile Pro  
 1540 1545 1550  
 Val Asp Leu Asp Ser Gln Val Asn Asn Leu Phe Leu Lys Ser His Asn  
 1555 1560 1565  
 Ile Val Gln Lys Thr Ala Met Asn Trp Arg Leu Ser Ala Arg Asn Ala  
 1570 1575 1580  
 Ala Arg Arg Asp Ser Val Leu Ala Ala Ser Arg Asp Tyr Arg Asn Ile  
 1585 1590 1595 1600  
 Ile Glu Arg Leu Gln Asp Ile Val Ser Ala Leu Glu Asp Arg Leu Arg  
 1605 1610 1615  
 Pro Leu Val Gln Ala Glu Leu Ser Val Leu Val Asp Val Leu His Arg  
 1620 1625 1630  
 Pro Glu Leu Leu Phe Pro Glu Asn Thr Asp Ala Arg Arg Lys Cys Glu  
 1635 1640 1645  
 Ser Gly Gly Phe Ile Cys Lys Leu Ile Lys His Thr Lys Gln Leu Leu  
 1650 1655 1660  
 Glu Glu Asn Glu Glu Lys Leu Cys Ile Lys Val Leu Gln Thr Leu Arg  
 1665 1670 1675 1680  
 Glu Met Met Thr Lys Asp Arg Gly Tyr Gly Glu Lys Gln Ile Ser Ile  
 1685 1690 1695  
 Asp Glu Leu Glu Asn Ala Glu Leu Pro Gln Pro Pro Glu Ala Glu Asn  
 1700 1705 1710  
 Ser Thr Glu Glu Leu Glu Pro Ser Pro Pro Leu Arg Gln Leu Glu Asp  
 1715 1720 1725  
 His Lys Arg Gly Glu Ala Leu Arg Gln Ile Leu Val Asn Arg Tyr Tyr  
 1730 1735 1740  
 Gly Asn Ile Arg Pro Ser Gly Arg Arg Glu Glu Leu Thr Ser Phe Gly  
 1745 1750 1755 1760  
 Asn Gly Pro Leu Ser Pro Gly Gly Pro Ser Lys Pro Gly Gly Gly Gly  
 1765 1770 1775  
 Gly Gly Pro Gly Ser Gly Ser Thr Ser Arg Gly Glu Met Ser Leu Ala  
 1780 1785 1790  
 Glu Val Gln Cys His Leu Asp Lys Glu Gly Ala Ser Asn Leu Val Ile  
 1795 1800 1805  
 Asp Leu Ile Met Asn Ala Ser Ser Asp Arg Val Phe His Glu Ser Ile  
 1810 1815 1820  
 Leu Leu Ala Ile Ala Leu Leu Glu Gly Gly Asn Thr Thr Ile Gln His  
 1825 1830 1835 1840  
 Ser Phe Phe Cys Arg Leu Thr Glu Asp Lys Lys Ser Glu Lys Phe Phe  
 1845 1850 1855  
 Lys Val Phe Tyr Asp Arg Met Lys Val Ala Gln Gln Glu Ile Lys Ala  
 1860 1865 1870  
 Thr Val Thr Val Asn Thr Ser Asp Leu Gly Asn Lys Lys Lys Asp Asp  
 1875 1880 1885  
 Glu Val Asp Arg Asp Ala Pro Ser Arg Lys Lys Ala Lys Glu Pro Thr  
 1890 1895 1900  
 Thr Gln Ile Thr Glu Glu Val Arg Asp Gln Leu Leu Glu Ala Ser Ala  
 1905 1910 1915 1920  
 Ala Thr Arg Lys Ala Phe Thr Thr Phe Arg Arg Glu Ala Asp Pro Asp  
 1925 1930 1935

Asp His Tyr Gln Ser Gly Glu Gly Thr Gln Ala Thr Thr Asp Lys Ala  
 1940 1945 1950  
 Lys Asp Asp Leu Glu Met Ser Ala Val Ile Thr Ile Met Gln Pro Ile  
 1955 1960 1965  
 Leu Arg Phe Leu Gln Leu Leu Cys Glu Asn His Asn Arg Asp Leu Gln  
 1970 1975 1980  
 Asn Phe Leu Arg Cys Gln Asn Asn Lys Thr Asn Tyr Asn Leu Val Cys  
 1985 1990 1995 2000  
 Glu Thr Leu Gln Phe Leu Asp Cys Ile Cys Gly Ser Thr Thr Gly Gly  
 2005 2010 2015  
 Leu Gly Leu Leu Gly Leu Tyr Ile Asn Glu Lys Asn Val Ala Leu Ile  
 2020 2025 2030  
 Asn Gln Thr Leu Glu Ser Leu Thr Glu Tyr Cys Gln Gly Pro Cys His  
 2035 2040 2045  
 Glu Asn Gln Asn Cys Ile Ala Thr His Glu Ser Asn Gly Ile Asp Ile  
 2050 2055 2060  
 Ile Thr Ala Leu Ile Leu Asn Asp Ile Asn Pro Leu Gly Lys Lys Arg  
 2065 2070 2075 2080  
 Met Asp Leu Val Leu Glu Leu Lys Asn Asn Ala Ser Lys Leu Leu Leu  
 2085 2090 2095  
 Ala Ile Met Glu Ser Arg His Asp Ser Glu Asn Ala Glu Arg Ile Leu  
 2100 2105 2110  
 Tyr Asn Met Arg Pro Lys Glu Leu Val Glu Val Ile Lys Lys Ala Tyr  
 2115 2120 2125  
 Met Gln Gly Glu Val Glu Phe Glu Asp Gly Glu Asn Gly Glu Asp Gly  
 2130 2135 2140  
 Ala Ala Ser Pro Arg Asn Val Gly His Asn Ile Tyr Ile Leu Ala His  
 2145 2150 2155 2160  
 Gln Leu Ala Arg His Asn Lys Glu Leu Gln Thr Met Leu Lys Pro Gly  
 2165 2170 2175  
 Gly Gln Val Asp Gly Asp Glu Ala Leu Glu Phe Tyr Ala Lys His Thr  
 2180 2185 2190  
 Ala Gln Ile Glu Ile Val Arg Leu Asp Arg Thr Met Glu Gln Ile Val  
 2195 2200 2205  
 Phe Pro Val Pro Ser Ile Cys Glu Phe Leu Thr Lys Glu Ser Lys Leu  
 2210 2215 2220  
 Arg Ile Tyr Tyr Thr Thr Glu Arg Asp Glu Gln Gly Ser Lys Ile Asn  
 2225 2230 2235 2240  
 Asp Phe Phe Leu Arg Ser Glu Asp Leu Phe Asn Glu Met Asn Trp Gln  
 2245 2250 2255  
 Lys Lys Leu Arg Ala Gln Pro Val Leu Tyr Trp Cys Ala Arg Asn Met  
 2260 2265 2270  
 Ser Phe Trp Ser Ser Ile Ser Phe Asn Leu Ala Val Leu Met Asn Leu  
 2275 2280 2285  
 Leu Val Ala Phe Phe Tyr Pro Phe Lys Gly Val Arg Gly Gly Thr Leu  
 2290 2295 2300  
 Glu Pro His Trp Ser Gly Leu Leu Trp Thr Ala Met Leu Ile Ser Leu  
 2305 2310 2315 2320  
 Ala Ile Val Ile Ala Leu Pro Lys Pro His Gly Ile Arg Ala Leu Ile  
 2325 2330 2335  
 Ala Ser Thr Ile Leu Arg Leu Ile Phe Ser Val Gly Leu Gln Pro Thr  
 2340 2345 2350  
 Leu Phe Leu Leu Gly Ala Phe Asn Val Cys Asn Lys Ile Ile Phe Leu  
 2355 2360 2365  
 Met Ser Phe Val Gly Asn Cys Gly Thr Phe Thr Arg Gly Tyr Arg Ala  
 2370 2375 2380  
 Met Val Leu Asp Val Glu Phe Leu Tyr His Leu Leu Tyr Leu Leu Ile  
 2385 2390 2395 2400  
 Cys Ala Met Gly Leu Phe Val His Glu Phe Phe Tyr Ser Leu Leu Leu  
 2405 2410 2415

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Phe Asp Leu Val Tyr Arg Glu Glu Thr Leu Leu Asn Val Ile Lys Ser
      2420                      2425                      2430
Val Thr Arg Asn Gly Arg Pro Ile Ile Leu Thr Ala Ala Leu Ala Leu
      2435                      2440                      2445
Ile Leu Val Tyr Leu Phe Ser Ile Val Gly Tyr Leu Phe Phe Lys Asp
      2450                      2455                      2460
Asp Phe Ile Leu Glu Val Asp Arg Leu Pro Asn Glu Thr Ala Gly Pro
2465                      2470                      2475                      2480
Glu Thr Gly Glu Ser Leu Ala Asn Asp Phe Leu Tyr Ser Asp Val Cys
      2485                      2490                      2495
Arg Val Glu Thr Gly Glu Asn Cys Thr Ser Pro Ala Pro Lys Glu Glu
      2500                      2505                      2510
Leu Leu Pro Val Glu Glu Thr Glu Gln Asp Lys Glu His Thr Cys Glu
      2515                      2520                      2525
Thr Leu Leu Met Cys Ile Val Thr Val Leu Ser His Gly Leu Arg Ser
      2530                      2535                      2540
Gly Gly Gly Val Gly Asp Val Leu Arg Lys Pro Ser Lys Glu Glu Pro
2545                      2550                      2555                      2560
Leu Phe Ala Ala Arg Val Ile Tyr Asp Leu Leu Phe Phe Phe Met Val
      2565                      2570                      2575
Ile Ile Ile Val Leu Asn Leu Ile Phe Gly Val Ile Ile Asp Thr Phe
      2580                      2585                      2590
Ala Asp Leu Arg Ser Glu Lys Gln Lys Lys Glu Glu Ile Leu Lys Thr
      2595                      2600                      2605
Thr Cys Phe Ile Cys Gly Leu Glu Arg Asp Lys Phe Asp Asn Lys Thr
      2610                      2615                      2620
Val Thr Phe Glu Glu His Ile Lys Glu Glu His Asn Met Trp His Tyr
2625                      2630                      2635                      2640
Leu Cys Phe Ile Val Leu Val Lys Val Lys Asp Ser Thr Glu Tyr Thr
      2645                      2650                      2655
Gly Pro Glu Ser Tyr Val Ala Glu Met Ile Arg Glu Arg Asn Leu Asp
      2660                      2665                      2670
Trp Phe Pro Arg Met Arg Ala Met Ser Leu Val Ser Ser Asp Ser Glu
      2675                      2680                      2685
Gly Glu Gln Asn Glu Leu Arg Asn Leu Gln Glu Lys Leu Glu Ser Thr
      2690                      2695                      2700
Met Lys Leu Val Thr Asn Leu Ser Gly Gln Leu Ser Glu Leu Lys Asp
2705                      2710                      2715                      2720
Gln Met Thr Glu Gln Arg Lys Gln Lys Gln Arg Ile Gly Leu Leu Gly
      2725                      2730                      2735
His Pro Pro His Met Asn Val Asn Pro Gln Gln Pro Ala
      2740                      2745

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&lt;210&gt; 7

&lt;211&gt; 2710

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence:/note =  
synthetic construct

&lt;400&gt; 7

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Met Ser Asp Lys Met Ser Ser Phe Leu His Ile Gly Asp Ile Cys Ser
 1                      5                      10                      15
Leu Tyr Ala Glu Gly Ser Thr Asn Gly Phe Ile Ser Thr Leu Gly Leu
      20                      25                      30
Val Asp Asp Arg Cys Val Val Gln Pro Glu Ala Gly Asp Leu Asn Asn
      35                      40                      45

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Pro	Pro	Lys	Lys	Phe	Arg	Asp	Cys	Leu	Phe	Lys	Leu	Cys	Pro	Met	Asn
50						55					60				
Arg	Tyr	Ser	Ala	Gln	Lys	Gln	Phe	Trp	Lys	Ala	Ala	Lys	Pro	Gly	Ala
65					70					75					80
Asn	Ser	Thr	Thr	Asp	Ala	Val	Leu	Leu	Asn	Lys	Leu	His	His	Ala	Ala
				85					90					95	
Asp	Leu	Glu	Lys	Lys	Gln	Asn	Glu	Thr	Glu	Asn	Arg	Lys	Leu	Leu	Gly
			100				105						110		
Thr	Val	Ile	Gln	Tyr	Gly	Asn	Val	Ile	Gln	Leu	Leu	His	Leu	Lys	Ser
		115				120						125			
Asn	Lys	Tyr	Leu	Thr	Val	Asn	Lys	Arg	Leu	Pro	Ala	Leu	Leu	Glu	Lys
	130					135					140				
Asn	Ala	Met	Arg	Val	Thr	Leu	Asp	Glu	Ala	Gly	Asn	Glu	Gly	Ser	Trp
145					150					155					160
Phe	Tyr	Ile	Gln	Pro	Phe	Tyr	Lys	Leu	Arg	Ser	Ile	Gly	Asp	Ser	Val
				165					170					175	
Val	Ile	Gly	Asp	Lys	Val	Val	Leu	Asn	Pro	Val	Asn	Ala	Gly	Gln	Pro
			180					185					190		
Leu	His	Ala	Ser	Ser	His	Gln	Leu	Val	Asp	Asn	Pro	Gly	Cys	Asn	Glu
	195					200						205			
Val	Asn	Ser	Val	Asn	Cys	Asn	Thr	Ser	Trp	Lys	Ile	Val	Leu	Phe	Met
	210					215					220				
Lys	Trp	Ser	Asp	Asn	Lys	Asp	Asp	Ile	Leu	Lys	Gly	Gly	Asp	Val	Val
225					230					235					240
Arg	Leu	Phe	His	Ala	Glu	Gln	Glu	Lys	Phe	Leu	Thr	Cys	Asp	Glu	His
				245					250					255	
Arg	Lys	Lys	Gln	His	Val	Phe	Leu	Arg	Thr	Thr	Gly	Arg	Gln	Ser	Ala
			260					265					270		
Thr	Ser	Ala	Thr	Ser	Ser	Lys	Ala	Leu	Trp	Glu	Val	Glu	Val	Val	Gln
		275				280						285			
His	Asp	Pro	Cys	Arg	Gly	Gly	Ala	Gly	Tyr	Trp	Asn	Ser	Leu	Phe	Arg
	290					295					300				
Phe	Lys	His	Leu	Ala	Thr	Gly	His	Tyr	Leu	Ala	Ala	Glu	Val	Asp	Pro
305					310					315					320
Asp	Phe	Glu	Glu	Glu	Cys	Leu	Glu	Phe	Gln	Pro	Ser	Val	Asp	Pro	Asp
				325					330					335	
Gln	Asp	Ala	Ser	Arg	Ser	Arg	Leu	Arg	Asn	Ala	Gln	Glu	Lys	Met	Val
		340						345					350		
Tyr	Ser	Leu	Val	Ser	Val	Pro	Glu	Gly	Asn	Asp	Ile	Ser	Ser	Ile	Phe
		355					360					365			
Glu	Leu	Asp	Pro	Thr	Thr	Leu	Arg	Gly	Gly	Asp	Ser	Leu	Val	Pro	Arg
	370					375					380				
Asn	Ser	Tyr	Val	Arg	Leu	Arg	His	Leu	Cys	Thr	Asn	Thr	Trp	Val	His
385					390					395					400
Ser	Thr	Asn	Ile	Pro	Ile	Asp	Lys	Glu	Glu	Glu	Lys	Pro	Val	Met	Leu
				405					410					415	
Lys	Ile	Gly	Thr	Ser	Pro	Leu	Lys	Glu	Asp	Lys	Glu	Ala	Phe	Ala	Ile
			420					425					430		
Val	Pro	Val	Ser	Pro	Ala	Glu	Val	Arg	Asp	Leu	Asp	Phe	Ala	Asn	Asp
	435						440					445			
Ala	Ser	Lys	Val	Leu	Gly	Ser	Ile	Ala	Gly	Lys	Leu	Glu	Lys	Gly	Thr
	450					455					460				
Ile	Thr	Gln	Asn	Glu	Arg	Arg	Ser	Val	Thr	Lys	Leu	Leu	Glu	Asp	Leu
465					470					475					480
Val	Tyr	Phe	Val	Thr	Gly	Gly	Thr	Asn	Ser	Gly	Gln	Asp	Val	Leu	Glu
				485					490					495	
Val	Val	Phe	Ser	Lys	Pro	Asn	Arg	Glu	Arg	Gln	Lys	Leu	Met	Arg	Glu
			500					505					510		
Gln	Asn	Ile	Leu	Lys	Gln	Ile	Phe	Lys	Leu	Leu	Gln	Ala	Pro	Phe	Thr
		515					520					525			

Asp	Cys	Gly	Asp	Gly	Pro	Met	Leu	Arg	Leu	Glu	Glu	Leu	Gly	Asp	Gln
530						535				540					
Arg	His	Ala	Pro	Phe	Arg	His	Ile	Cys	Arg	Leu	Cys	Tyr	Arg	Val	Leu
545					550					555					560
Arg	His	Ser	Gln	Gln	Asp	Tyr	Arg	Lys	Asn	Gln	Glu	Tyr	Ile	Ala	Lys
				565					570					575	
Gln	Phe	Gly	Phe	Met	Gln	Lys	Gln	Ile	Gly	Tyr	Asp	Val	Leu	Ala	Glu
			580					585					590		
Asp	Thr	Ile	Thr	Ala	Leu	Leu	His	Asn	Asn	Arg	Lys	Leu	Leu	Glu	Lys
	595						600					605			
His	Ile	Thr	Ala	Ala	Glu	Ile	Asp	Thr	Phe	Val	Ser	Leu	Val	Arg	Lys
	610						615					620			
Asn	Arg	Glu	Pro	Arg	Phe	Leu	Asp	Tyr	Leu	Ser	Asp	Leu	Cys	Val	Ser
625					630					635					640
Met	Asn	Lys	Ser	Ile	Pro	Val	Thr	Gln	Glu	Leu	Ile	Cys	Lys	Ala	Val
				645					650					655	
Leu	Asn	Pro	Thr	Asn	Ala	Asp	Ile	Leu	Ile	Glu	Thr	Lys	Leu	Val	Leu
			660					665						670	
Ser	Arg	Phe	Glu	Phe	Glu	Gly	Val	Ser	Thr	Gly	Glu	Asn	Ala	Leu	Glu
		675					680						685		
Ala	Gly	Glu	Asp	Glu	Glu	Glu	Val	Trp	Leu	Phe	Trp	Arg	Asp	Ser	Asn
	690					695						700			
Lys	Glu	Ile	Arg	Ser	Lys	Ser	Val	Arg	Glu	Leu	Ala	Gln	Asp	Ala	Lys
705					710					715					720
Glu	Gly	Gln	Lys	Glu	Asp	Arg	Asp	Val	Leu	Ser	Tyr	Tyr	Arg	Tyr	Gln
				725					730					735	
Leu	Asn	Leu	Phe	Ala	Arg	Met	Cys	Leu	Asp	Arg	Gln	Tyr	Leu	Ala	Ile
			740				745						750		
Asn	Glu	Ile	Ser	Gly	Gln	Leu	Asp	Val	Asp	Leu	Ile	Leu	Arg	Cys	Met
	755						760						765		
Ser	Asp	Glu	Asn	Leu	Pro	Tyr	Asp	Leu	Arg	Ala	Ser	Phe	Cys	Arg	Leu
	770					775						780			
Met	Leu	His	Met	His	Val	Asp	Arg	Asp	Pro	Gln	Glu	Gln	Val	Thr	Pro
785					790					795					800
Val	Lys	Tyr	Ala	Arg	Leu	Trp	Ser	Glu	Ile	Pro	Ser	Glu	Ile	Ala	Ile
				805					810					815	
Asp	Asp	Tyr	Asp	Ser	Ser	Gly	Ala	Ser	Lys	Asp	Glu	Ile	Lys	Glu	Arg
			820				825						830		
Phe	Ala	Gln	Thr	Met	Glu	Phe	Val	Glu	Glu	Tyr	Leu	Arg	Asp	Val	Val
		835					840					845			
Cys	Gln	Arg	Phe	Pro	Phe	Ser	Asp	Lys	Glu	Lys	Asn	Lys	Leu	Thr	Phe
	850					855					860				
Glu	Val	Val	Asn	Leu	Ala	Arg	Asn	Leu	Ile	Tyr	Phe	Gly	Phe	Tyr	Asn
865					870					875					880
Phe	Ser	Asp	Leu	Leu	Arg	Leu	Thr	Lys	Ile	Leu	Leu	Ala	Ile	Leu	Asp
				885					890					895	
Cys	Val	His	Val	Thr	Thr	Ile	Phe	Pro	Ile	Ser	Lys	Met	Thr	Lys	Gly
		900						905					910		
Glu	Glu	Asn	Lys	Gly	Ser	Asn	Val	Met	Arg	Ser	Ile	His	Gly	Val	Gly
		915					920					925			
Glu	Leu	Met	Thr	Gln	Val	Val	Leu	Arg	Gly	Gly	Gly	Phe	Leu	Pro	Met
	930					935						940			
Thr	Pro	Met	Ala	Ala	Ala	Pro	Glu	Gly	Asn	Val	Lys	Gln	Ala	Glu	Pro
945					950					955					960
Glu	Lys	Glu	Asp	Ile	Met	Val	Met	Asp	Thr	Lys	Leu	Lys	Ile	Ile	Glu
				965					970					975	
Ile	Leu	Gln	Phe	Ile	Leu	Asn	Val	Arg	Leu	Asp	Tyr	Arg	Ile	Ser	Cys
		980						985					990		
Leu	Leu	Cys	Ile	Phe	Lys	Arg	Glu	Phe	Asp	Glu	Ser	Asn	Ser	Gln	Ser
		995					1000						1005		

Ser Glu Thr Ser Ser Gly Asn Ser Ser Gln Glu Gly Pro Ser Asn Val  
 1010 1015 1020  
 Pro Gly Ala Leu Asp Phe Glu His Ile Glu Glu Gln Ala Glu Gly Ile  
 1025 1030 1035 1040  
 Phe Gly Gly Ser Glu Glu Asn Thr Pro Leu Asp Leu Asp Asp His Gly  
 1045 1050 1055  
 Gly Arg Thr Phe Leu Arg Val Leu Leu His Leu Thr Met His Asp Tyr  
 1060 1065 1070  
 Pro Pro Leu Val Ser Gly Ala Leu Gln Leu Leu Phe Arg His Phe Ser  
 1075 1080 1085  
 Gln Arg Gln Glu Val Leu Gln Ala Phe Lys Gln Val Gln Leu Leu Val  
 1090 1095 1100  
 Thr Ser Gln Asp Val Asp Asn Tyr Lys Gln Ile Lys Gln Asp Leu Asp  
 1105 1110 1115 1120  
 Gln Leu Arg Ser Ile Val Glu Lys Ser Glu Leu Trp Val Tyr Lys Gly  
 1125 1130 1135  
 Gln Gly Pro Asp Glu Pro Met Asp Gly Ala Ser Gly Glu Asn Glu His  
 1140 1145 1150  
 Lys Lys Thr Glu Glu Gly Thr Ser Lys Pro Leu Lys His Glu Ser Thr  
 1155 1160 1165  
 Ser Ser Tyr Asn Tyr Arg Val Val Lys Glu Ile Leu Ile Arg Leu Ser  
 1170 1175 1180  
 Lys Leu Cys Val Gln Glu Ser Ala Ser Val Arg Lys Ser Arg Lys Gln  
 1185 1190 1195 1200  
 Gln Gln Arg Leu Leu Arg Asn Met Gly Ala His Ala Val Val Leu Glu  
 1205 1210 1215  
 Leu Leu Gln Ile Pro Tyr Glu Lys Ala Glu Asp Thr Lys Met Gln Glu  
 1220 1225 1230  
 Ile Met Arg Leu Ala His Glu Phe Leu Gln Asn Phe Cys Ala Gly Asn  
 1235 1240 1245  
 Gln Gln Asn Gln Ala Leu Leu His Lys His Ile Asn Leu Phe Leu Asn  
 1250 1255 1260  
 Pro Gly Ile Leu Glu Ala Val Thr Met Gln His Ile Phe Met Asn Asn  
 1265 1270 1275 1280  
 Phe Gln Leu Cys Ser Glu Ile Asn Glu Arg Val Val Gln His Phe Val  
 1285 1290 1295  
 His Cys Ile Glu Thr His Gly Arg Asn Val Gln Tyr Ile Lys Phe Leu  
 1300 1305 1310  
 Gln Thr Ile Val Lys Ala Glu Gly Lys Phe Ile Lys Lys Cys Gln Asp  
 1315 1320 1325  
 Met Val Met Ala Glu Leu Val Asn Ser Gly Glu Asp Val Leu Val Phe  
 1330 1335 1340  
 Tyr Asn Asp Arg Ala Ser Phe Gln Thr Leu Ile Gln Met Met Arg Ser  
 1345 1350 1355 1360  
 Glu Arg Asp Arg Met Asp Glu Asn Ser Pro Leu Phe Met Tyr His Ile  
 1365 1370 1375  
 His Leu Val Glu Leu Leu Ala Val Cys Thr Glu Gly Lys Asn Val Tyr  
 1380 1385 1390  
 Thr Glu Ile Lys Cys Asn Ser Leu Leu Pro Leu Asp Asp Ile Val Arg  
 1395 1400 1405  
 Val Val Thr His Glu Asp Cys Ile Pro Glu Val Lys Ile Ala Tyr Ile  
 1410 1415 1420  
 Asn Phe Leu Asn His Cys Tyr Val Asp Thr Glu Val Glu Met Lys Glu  
 1425 1430 1435 1440  
 Ile Tyr Thr Ser Asn His Met Trp Lys Leu Phe Glu Asn Phe Leu Val  
 1445 1450 1455  
 Asp Ile Cys Arg Ala Cys Asn Asn Thr Ser Asp Arg Lys His Ala Asp  
 1460 1465 1470  
 Ser Val Leu Glu Lys Tyr Val Thr Glu Ile Val Met Ser Ile Val Thr  
 1475 1480 1485

Thr	Phe	Phe	Ser	Ser	Pro	Phe	Ser	Asp	Gln	Ser	Thr	Thr	Leu	Gln	Thr	1490	1495	1500
Arg	Gln	Pro	Val	Phe	Val	Gln	Leu	Leu	Gln	Gly	Val	Phe	Arg	Val	Tyr	1505	1510	1515
His	Cys	Asn	Trp	Leu	Met	Pro	Ser	Gln	Lys	Ala	Ser	Val	Glu	Ser	Cys	1525	1530	1535
Ile	Arg	Val	Leu	Ser	Asp	Val	Ala	Lys	Ser	Arg	Ala	Ile	Ala	Ile	Pro	1540	1545	1550
Val	Asp	Leu	Asp	Ser	Gln	Val	Asn	Asn	Leu	Phe	Leu	Lys	Ser	His	Asn	1555	1560	1565
Ile	Val	Gln	Lys	Thr	Ala	Met	Asn	Trp	Arg	Leu	Ser	Ala	Arg	Asn	Ala	1570	1575	1580
Ala	Arg	Arg	Asp	Ser	Val	Leu	Ala	Ala	Ser	Arg	Asp	Tyr	Arg	Asn	Ile	1585	1590	1595
Ile	Glu	Arg	Leu	Gln	Asp	Ile	Val	Ser	Ala	Leu	Glu	Asp	Arg	Leu	Arg	1605	1610	1615
Pro	Leu	Val	Gln	Ala	Glu	Leu	Ser	Val	Leu	Val	Asp	Val	Leu	His	Arg	1620	1625	1630
Pro	Glu	Leu	Phe	Pro	Glu	Asn	Thr	Asp	Ala	Arg	Arg	Lys	Cys	Glu		1635	1640	1645
Ser	Gly	Gly	Phe	Ile	Cys	Lys	Leu	Ile	Lys	His	Thr	Lys	Gln	Leu	Leu	1650	1655	1660
Glu	Glu	Asn	Glu	Glu	Lys	Leu	Cys	Ile	Lys	Val	Leu	Gln	Thr	Leu	Arg	1665	1670	1675
Glu	Met	Met	Thr	Lys	Asp	Arg	Gly	Tyr	Gly	Glu	Lys	Gly	Glu	Ala	Leu	1685	1690	1695
Arg	Gln	Ile	Leu	Val	Asn	Arg	Tyr	Tyr	Gly	Asn	Ile	Arg	Pro	Ser	Gly	1700	1705	1710
Arg	Arg	Glu	Asp	Leu	Thr	Ser	Phe	Gly	Asn	Gly	Pro	Leu	Ser	Pro	Gly	1715	1720	1725
Gly	Pro	Ser	Lys	Pro	Gly	Gly	Gly	Gly	Gly	Gly	Pro	Gly	Ser	Gly	Ser	1730	1735	1740
Thr	Ser	Arg	Gly	Glu	Met	Ser	Leu	Ala	Glu	Val	Gln	Cys	His	Leu	Asp	1745	1750	1755
Lys	Glu	Gly	Ala	Ser	Asn	Leu	Val	Ile	Asp	Leu	Ile	Met	Asn	Ala	Ser	1765	1770	1775
Ser	Asp	Arg	Val	Phe	His	Glu	Ser	Ile	Leu	Leu	Ala	Ile	Ala	Leu	Leu	1780	1785	1790
Glu	Gly	Gly	Asn	Thr	Thr	Ile	Gln	His	Ser	Phe	Phe	Cys	Arg	Leu	Thr	1795	1800	1805
Glu	Asp	Lys	Lys	Ser	Glu	Lys	Phe	Phe	Lys	Val	Phe	Tyr	Asp	Arg	Met	1810	1815	1820
Lys	Val	Ala	Gln	Gln	Glu	Ile	Lys	Ala	Thr	Val	Thr	Val	Asn	Thr	Ser	1825	1830	1835
Asp	Leu	Gly	Asn	Lys	Lys	Lys	Asp	Asp	Glu	Val	Asp	Arg	Asp	Ala	Pro	1845	1850	1855
Ser	Arg	Lys	Lys	Ala	Lys	Glu	Pro	Thr	Thr	Gln	Ile	Thr	Glu	Glu	Val	1860	1865	1870
Arg	Asp	Gln	Leu	Leu	Glu	Ala	Ser	Ala	Ala	Thr	Arg	Lys	Ala	Phe	Thr	1875	1880	1885
Thr	Phe	Arg	Arg	Glu	Ala	Asp	Pro	Asp	Asp	His	Tyr	Gln	Ser	Gly	Glu	1890	1895	1900
Gly	Thr	Gln	Ala	Thr	Thr	Asp	Lys	Ala	Lys	Asp	Asp	Leu	Glu	Met	Ser	1905	1910	1915
Ala	Val	Ile	Thr	Ile	Met	Gln	Pro	Ile	Leu	Arg	Phe	Leu	Gln	Leu	Leu	1925	1930	1935
Cys	Glu	Asn	His	Asn	Arg	Asp	Leu	Gln	Asn	Phe	Leu	Arg	Cys	Gln	Asn	1940	1945	1950
Asn	Lys	Thr	Asn	Tyr	Asn	Leu	Val	Cys	Glu	Thr	Leu	Gln	Phe	Leu	Asp	1955	1960	1965



Cys Ile Cys Gly Ser Thr Thr Gly Gly Leu Gly Leu Leu Gly Leu Tyr  
 1970 1975 1980  
 Ile Asn Glu Lys Asn Val Ala Leu Ile Asn Gln Thr Leu Glu Ser Leu  
 1985 1990 1995 2000  
 Thr Glu Tyr Cys Gln Gly Pro Cys His Glu Asn Gln Asn Cys Ile Ala  
 2005 2010 2015  
 Thr His Glu Ser Asn Gly Ile Asp Ile Ile Thr Ala Leu Ile Leu Asn  
 2020 2025 2030  
 Asp Ile Asn Pro Leu Gly Lys Lys Arg Met Asp Leu Val Leu Glu Leu  
 2035 2040 2045  
 Lys Asn Asn Ala Ser Lys Leu Leu Ala Ile Met Glu Ser Arg His  
 2050 2055 2060  
 Asp Ser Glu Asn Ala Glu Arg Ile Leu Tyr Asn Met Arg Pro Lys Glu  
 2065 2070 2075 2080  
 Leu Val Glu Val Ile Lys Lys Ala Tyr Met Gln Gly Glu Val Glu Phe  
 2085 2090 2095  
 Glu Asp Gly Glu Asn Gly Glu Asp Gly Ala Ala Ser Pro Arg Asn Val  
 2100 2105 2110  
 Gly His Asn Ile Tyr Ile Leu Ala His Gln Leu Ala Arg His Asn Lys  
 2115 2120 2125  
 Glu Leu Gln Thr Met Leu Lys Pro Gly Gly Gln Val Asp Gly Asp Glu  
 2130 2135 2140  
 Ala Leu Glu Phe Tyr Ala Lys His Thr Ala Gln Ile Glu Ile Val Arg  
 2145 2150 2155 2160  
 Leu Asp Arg Thr Met Glu Gln Ile Val Phe Pro Val Pro Ser Ile Cys  
 2165 2170 2175  
 Glu Phe Leu Thr Lys Glu Ser Lys Leu Arg Ile Tyr Tyr Thr Thr Glu  
 2180 2185 2190  
 Arg Asp Glu Gln Gly Ser Lys Ile Asn Asp Phe Phe Leu Arg Ser Glu  
 2195 2200 2205  
 Asp Leu Phe Asn Glu Met Asn Trp Gln Lys Lys Leu Arg Ala Gln Pro  
 2210 2215 2220  
 Val Leu Tyr Trp Cys Ala Arg Asn Met Ser Phe Trp Ser Ser Ile Ser  
 2225 2230 2235 2240  
 Phe Asn Leu Ala Val Leu Met Asn Leu Leu Val Ala Phe Phe Tyr Pro  
 2245 2250 2255  
 Phe Lys Gly Val Arg Gly Gly Thr Leu Glu Pro His Trp Ser Gly Leu  
 2260 2265 2270  
 Leu Trp Thr Ala Met Leu Ile Ser Leu Ala Ile Val Ile Ala Leu Pro  
 2275 2280 2285  
 Lys Pro His Gly Ile Arg Ala Leu Ile Ala Ser Thr Ile Leu Arg Leu  
 2290 2295 2300  
 Ile Phe Ser Val Gly Leu Gln Pro Thr Leu Phe Leu Leu Gly Ala Phe  
 2305 2310 2315 2320  
 Asn Val Cys Asn Lys Ile Ile Phe Leu Met Ser Phe Val Gly Asn Cys  
 2325 2330 2335  
 Gly Thr Phe Thr Arg Gly Tyr Arg Ala Met Val Leu Asp Val Glu Phe  
 2340 2345 2350  
 Leu Tyr His Leu Leu Tyr Leu Leu Ile Cys Ala Met Gly Leu Phe Val  
 2355 2360 2365  
 His Glu Phe Phe Tyr Ser Leu Leu Leu Phe Asp Leu Val Tyr Arg Glu  
 2370 2375 2380  
 Glu Thr Leu Leu Asn Val Ile Lys Ser Val Thr Arg Asn Gly Arg Pro  
 2385 2390 2395 2400  
 Ile Ile Leu Thr Ala Ala Leu Ala Leu Ile Leu Val Tyr Leu Phe Ser  
 2405 2410 2415  
 Ile Val Gly Tyr Leu Phe Phe Lys Asp Asp Phe Ile Leu Glu Val Asp  
 2420 2425 2430  
 Arg Leu Pro Asn Glu Thr Ala Gly Pro Glu Thr Gly Glu Ser Leu Ala  
 2435 2440 2445

Asn Asp Phe Leu Tyr Ser Asp Val Cys Arg Val Glu Thr Gly Glu Asn  
 2450 2455 2460  
 Cys Thr Ser Pro Ala Pro Lys Glu Glu Leu Leu Pro Val Glu Glu Thr  
 2465 2470 2475 2480  
 Glu Gln Asp Lys Glu His Thr Cys Glu Thr Leu Leu Met Cys Ile Val  
 2485 2490 2495  
 Thr Val Leu Ser His Gly Leu Arg Ser Gly Gly Gly Val Gly Asp Val  
 2500 2505 2510  
 Leu Arg Lys Pro Ser Lys Glu Glu Pro Leu Phe Ala Ala Arg Val Ile  
 2515 2520 2525  
 Tyr Asp Leu Leu Phe Phe Phe Met Val Ile Ile Ile Val Leu Asn Leu  
 2530 2535 2540  
 Ile Phe Gly Val Ile Ile Asp Thr Phe Ala Asp Leu Arg Ser Glu Lys  
 2545 2550 2555 2560  
 Gln Lys Lys Glu Glu Ile Leu Lys Thr Thr Cys Phe Ile Cys Gly Leu  
 2565 2570 2575  
 Glu Arg Asp Lys Phe Asp Asn Lys Thr Val Thr Phe Glu Glu His Ile  
 2580 2585 2590  
 Lys Glu Glu His Asn Met Trp His Tyr Leu Cys Phe Ile Val Leu Val  
 2595 2600 2605  
 Lys Val Lys Asp Ser Thr Glu Tyr Thr Gly Pro Glu Ser Tyr Val Ala  
 2610 2615 2620  
 Glu Met Ile Arg Glu Arg Asn Leu Asp Trp Phe Pro Arg Met Arg Ala  
 2625 2630 2635 2640  
 Met Ser Leu Val Ser Ser Asp Ser Glu Gly Glu Gln Asn Glu Leu Arg  
 2645 2650 2655  
 Asn Leu Gln Glu Lys Leu Glu Ser Thr Met Lys Leu Val Thr Asn Leu  
 2660 2665 2670  
 Ser Gly Gln Leu Ser Glu Leu Lys Asp Gln Met Thr Glu Gln Arg Lys  
 2675 2680 2685  
 Gln Lys Gln Arg Ile Gly Leu Leu Gly His Pro Pro His Met Asn Val  
 2690 2695 2700  
 Asn Pro Gln Gln Pro Ala  
 2705 2710

<210> 8

<211> 2749

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =  
synthetic construct

<400> 8

Met Ser Asp Lys Met Ser Ser Phe Leu His Ile Gly Asp Ile Cys Ser  
 1 5 10 15  
 Leu Tyr Ala Glu Gly Ser Thr Asn Gly Phe Ile Ser Thr Leu Gly Leu  
 20 25 30  
 Val Asp Asp Arg Cys Val Val Gln Pro Glu Ala Gly Asp Leu Asn Asn  
 35 40 45  
 Pro Pro Lys Lys Phe Arg Asp Cys Leu Phe Lys Leu Cys Pro Met Asn  
 50 55 60  
 Arg Tyr Ser Ala Gln Lys Gln Phe Trp Lys Ala Ala Lys Pro Gly Ala  
 65 70 75 80  
 Asn Ser Thr Thr Asp Ala Val Leu Leu Asn Lys Leu His His Ala Ala  
 85 90 95  
 Asp Leu Glu Lys Lys Gln Asn Glu Thr Glu Asn Arg Lys Leu Leu Gly  
 100 105 110

Thr	Val	Ile	Gln	Tyr	Gly	Asn	Val	Ile	Gln	Leu	Leu	His	Leu	Lys	Ser		
		115					120					125					
Asn	Lys	Tyr	Leu	Thr	Val	Asn	Lys	Arg	Leu	Pro	Ala	Leu	Leu	Glu	Lys		
		130					135				140						
Asn	Ala	Met	Arg	Val	Thr	Leu	Asp	Glu	Ala	Gly	Asn	Glu	Gly	Ser	Trp		
						150				155					160		
Phe	Tyr	Ile	Gln	Pro	Phe	Tyr	Lys	Leu	Arg	Ser	Ile	Gly	Asp	Ser	Val		
				165					170						175		
Val	Ile	Gly	Asp	Lys	Val	Val	Leu	Asn	Pro	Val	Asn	Ala	Gly	Gln	Pro		
			180					185						190			
Leu	His	Ala	Ser	Ser	His	Gln	Leu	Val	Asp	Asn	Pro	Gly	Cys	Asn	Glu		
		195					200					205					
Val	Asn	Ser	Val	Asn	Cys	Asn	Thr	Ser	Trp	Lys	Ile	Val	Leu	Phe	Met		
		210				215					220						
Lys	Trp	Ser	Asp	Asn	Lys	Asp	Asp	Ile	Leu	Lys	Gly	Gly	Asp	Val	Val		
				230						235					240		
Arg	Leu	Phe	His	Ala	Glu	Gln	Glu	Lys	Phe	Leu	Thr	Cys	Asp	Glu	His		
				245					250						255		
Arg	Lys	Lys	Gln	His	Val	Phe	Leu	Arg	Thr	Thr	Gly	Arg	Gln	Ser	Ala		
			260					265						270			
Thr	Ser	Ala	Thr	Ser	Ser	Lys	Ala	Leu	Trp	Glu	Val	Glu	Val	Val	Gln		
		275					280					285					
His	Asp	Pro	Cys	Arg	Gly	Gly	Ala	Gly	Tyr	Trp	Asn	Ser	Leu	Phe	Arg		
		290				295					300						
Phe	Lys	His	Leu	Ala	Thr	Gly	His	Tyr	Leu	Ala	Ala	Glu	Val	Asp	Pro		
				310						315					320		
Asp	Phe	Glu	Glu	Glu	Cys	Leu	Glu	Phe	Gln	Pro	Ser	Val	Asp	Pro	Asp		
				325					330						335		
Gln	Asp	Ala	Ser	Arg	Ser	Arg	Leu	Arg	Asn	Ala	Gln	Glu	Lys	Met	Val		
			340					345						350			
Tyr	Ser	Leu	Val	Ser	Val	Pro	Glu	Gly	Asn	Asp	Ile	Ser	Ser	Ile	Phe		
		355				360						365					
Glu	Leu	Asp	Pro	Thr	Thr	Leu	Arg	Gly	Gly	Asp	Ser	Leu	Val	Pro	Arg		
		370				375					380						
Asn	Ser	Tyr	Val	Arg	Leu	Arg	His	Leu	Cys	Thr	Asn	Thr	Trp	Val	His		
				390						395					400		
Ser	Thr	Asn	Ile	Pro	Ile	Asp	Lys	Glu	Glu	Lys	Pro	Val	Met	Leu			
				405					410					415			
Lys	Ile	Gly	Thr	Ser	Pro	Leu	Lys	Glu	Asp	Lys	Glu	Ala	Phe	Ala	Ile		
			420					425					430				
Val	Pro	Val	Ser	Pro	Ala	Glu	Val	Arg	Asp	Leu	Asp	Phe	Ala	Asn	Asp		
		435				440						445					
Ala	Ser	Lys	Val	Leu	Gly	Ser	Ile	Ala	Gly	Lys	Leu	Glu	Lys	Gly	Thr		
		450				455					460						
Ile	Thr	Gln	Asn	Glu	Arg	Arg	Ser	Val	Thr	Lys	Leu	Leu	Glu	Asp	Leu		
				470						475					480		
Val	Tyr	Phe	Val	Thr	Gly	Gly	Thr	Asn	Ser	Gly	Gln	Asp	Val	Leu	Glu		
				485					490					495			
Val	Val	Phe	Ser	Lys	Pro	Asn	Arg	Glu	Arg	Gln	Lys	Leu	Met	Arg	Glu		
			500					505					510				
Gln	Asn	Ile	Leu	Lys	Gln	Ile	Phe	Lys	Leu	Leu	Gln	Ala	Pro	Phe	Thr		
		515					520					525					
Asp	Cys	Gly	Asp	Gly	Pro	Met	Leu	Arg	Leu	Glu	Glu	Leu	Gly	Asp	Gln		
		530				535					540						
Arg	His	Ala	Pro	Phe	Arg	His	Ile	Cys	Arg	Leu	Cys	Tyr	Arg	Val	Leu		
				550						555					560		
Arg	His	Ser	Gln	Gln	Asp	Tyr	Arg	Lys	Asn	Gln	Glu	Tyr	Ile	Ala	Lys		
				565					570					575			
Gln	Phe	Gly	Phe	Met	Gln	Lys	Gln	Ile	Gly	Tyr	Asp	Val	Leu	Ala	Glu		
			580					585					590				

Asp	Thr	Ile	Thr	Ala	Leu	Leu	His	Asn	Asn	Arg	Lys	Leu	Leu	Glu	Lys	595	600	605
His	Ile	Thr	Ala	Ala	Glu	Ile	Asp	Thr	Phe	Val	Ser	Leu	Val	Arg	Lys	610	615	620
Asn	Arg	Glu	Pro	Arg	Phe	Leu	Asp	Tyr	Leu	Ser	Asp	Leu	Cys	Val	Ser	625	630	635
Met	Asn	Lys	Ser	Ile	Pro	Val	Thr	Gln	Glu	Leu	Ile	Cys	Lys	Ala	Val	645	650	655
Leu	Asn	Pro	Thr	Asn	Ala	Asp	Ile	Leu	Ile	Glu	Thr	Lys	Leu	Val	Leu	660	665	670
Ser	Arg	Phe	Glu	Phe	Glu	Gly	Val	Ser	Thr	Gly	Glu	Asn	Ala	Leu	Glu	675	680	685
Ala	Gly	Glu	Asp	Glu	Glu	Glu	Val	Trp	Leu	Phe	Trp	Arg	Asp	Ser	Asn	690	695	700
Lys	Glu	Ile	Arg	Ser	Lys	Ser	Val	Arg	Glu	Leu	Ala	Gln	Asp	Ala	Lys	705	710	715
Glu	Gly	Gln	Lys	Glu	Asp	Arg	Asp	Val	Leu	Ser	Tyr	Tyr	Arg	Tyr	Gln	725	730	735
Leu	Asn	Leu	Phe	Ala	Arg	Met	Cys	Leu	Asp	Arg	Gln	Tyr	Leu	Ala	Ile	740	745	750
Asn	Glu	Ile	Ser	Gly	Gln	Leu	Asp	Val	Asp	Leu	Ile	Leu	Arg	Cys	Met	755	760	765
Ser	Asp	Glu	Asn	Leu	Pro	Tyr	Asp	Leu	Arg	Ala	Ser	Phe	Cys	Arg	Leu	770	775	780
Met	Leu	His	Met	His	Val	Asp	Arg	Asp	Pro	Gln	Glu	Gln	Val	Thr	Pro	785	790	795
Val	Lys	Tyr	Ala	Arg	Leu	Trp	Ser	Glu	Ile	Pro	Ser	Glu	Ile	Ala	Ile	805	810	815
Asp	Asp	Tyr	Asp	Ser	Ser	Gly	Ala	Ser	Lys	Asp	Glu	Ile	Lys	Glu	Arg	820	825	830
Phe	Ala	Gln	Thr	Met	Glu	Phe	Val	Glu	Glu	Tyr	Leu	Arg	Asp	Val	Val	835	840	845
Cys	Gln	Arg	Phe	Pro	Phe	Ser	Asp	Lys	Glu	Lys	Asn	Lys	Leu	Thr	Phe	850	855	860
Glu	Val	Val	Asn	Leu	Ala	Arg	Asn	Leu	Ile	Tyr	Phe	Gly	Phe	Tyr	Asn	865	870	875
Phe	Ser	Asp	Leu	Leu	Arg	Leu	Thr	Lys	Ile	Leu	Leu	Ala	Ile	Leu	Asp	885	890	895
Cys	Val	His	Val	Thr	Thr	Ile	Phe	Pro	Ile	Ser	Lys	Met	Thr	Lys	Gly	900	905	910
Glu	Glu	Asn	Lys	Gly	Ser	Asn	Val	Met	Arg	Ser	Ile	His	Gly	Val	Gly	915	920	925
Glu	Leu	Met	Thr	Gln	Val	Val	Leu	Arg	Gly	Gly	Gly	Phe	Leu	Pro	Met	930	935	940
Thr	Pro	Met	Ala	Ala	Ala	Pro	Glu	Gly	Asn	Val	Lys	Gln	Ala	Glu	Pro	945	950	955
Glu	Lys	Glu	Asp	Ile	Met	Val	Met	Asp	Thr	Lys	Leu	Lys	Ile	Ile	Glu	965	970	975
Ile	Leu	Gln	Phe	Ile	Leu	Asn	Val	Arg	Leu	Asp	Tyr	Arg	Ile	Ser	Cys	980	985	990
Leu	Leu	Cys	Ile	Phe	Lys	Arg	Glu	Phe	Asp	Glu	Ser	Asn	Ser	Gln	Ser	995	1000	1005
Ser	Glu	Thr	Ser	Ser	Gly	Asn	Ser	Ser	Gln	Glu	Gly	Pro	Ser	Asn	Val	1010	1015	1020
Pro	Gly	Ala	Leu	Asp	Phe	Glu	His	Ile	Glu	Glu	Gln	Ala	Glu	Gly	Ile	1025	1030	1035
Phe	Gly	Gly	Ser	Glu	Glu	Asn	Thr	Pro	Leu	Asp	Leu	Asp	Asp	His	Gly	1045	1050	1055
Gly	Arg	Thr	Phe	Leu	Arg	Val	Leu	Leu	His	Leu	Thr	Met	His	Asp	Tyr	1060	1065	1070

Pro Pro Leu Val Ser Gly Ala Leu Gln Leu Leu Phe Arg His Phe Ser  
 1075 1080 1085  
 Gln Arg Gln Glu Val Leu Gln Ala Phe Lys Gln Val Gln Leu Leu Val  
 1090 1095 1100  
 Thr Ser Gln Asp Val Asp Asn Tyr Lys Gln Ile Lys Gln Asp Leu Asp  
 1105 1110 1115 1120  
 Gln Leu Arg Ser Ile Val Glu Lys Ser Glu Leu Trp Val Tyr Lys Gly  
 1125 1130 1135  
 Gln Gly Pro Asp Glu Pro Met Asp Gly Ala Ser Gly Glu Asn Glu His  
 1140 1145 1150  
 Lys Lys Thr Glu Glu Gly Thr Ser Lys Pro Leu Lys His Glu Ser Thr  
 1155 1160 1165  
 Ser Ser Tyr Asn Tyr Arg Val Val Lys Glu Ile Leu Ile Arg Leu Ser  
 1170 1175 1180  
 Lys Leu Cys Val Gln Glu Ser Ala Ser Val Arg Lys Ser Arg Lys Gln  
 1185 1190 1195 1200  
 Gln Gln Arg Leu Leu Arg Asn Met Gly Ala His Ala Val Val Leu Glu  
 1205 1210 1215  
 Leu Leu Gln Ile Pro Tyr Glu Lys Ala Glu Asp Thr Lys Met Gln Glu  
 1220 1225 1230  
 Ile Met Arg Leu Ala His Glu Phe Leu Gln Asn Phe Cys Ala Gly Asn  
 1235 1240 1245  
 Gln Gln Asn Gln Ala Leu Leu His Lys His Ile Asn Leu Phe Leu Asn  
 1250 1255 1260  
 Pro Gly Ile Leu Glu Ala Val Thr Met Gln His Ile Phe Met Asn Asn  
 1265 1270 1275 1280  
 Phe Gln Leu Cys Ser Glu Ile Asn Glu Arg Val Val Gln His Phe Val  
 1285 1290 1295  
 His Cys Ile Glu Thr His Gly Arg Asn Val Gln Tyr Ile Lys Phe Leu  
 1300 1305 1310  
 Gln Thr Ile Val Lys Ala Glu Gly Lys Phe Ile Lys Lys Cys Gln Asp  
 1315 1320 1325  
 Met Val Met Ala Glu Leu Val Asn Ser Gly Glu Asp Val Leu Val Phe  
 1330 1335 1340  
 Tyr Asn Asp Arg Ala Ser Phe Gln Thr Leu Ile Gln Met Met Arg Ser  
 1345 1350 1355 1360  
 Glu Arg Asp Arg Met Asp Glu Asn Ser Pro Leu Phe Met Tyr His Ile  
 1365 1370 1375  
 His Leu Val Glu Leu Leu Ala Val Cys Thr Glu Gly Lys Asn Val Tyr  
 1380 1385 1390  
 Thr Glu Ile Lys Cys Asn Ser Leu Leu Pro Leu Asp Asp Ile Val Arg  
 1395 1400 1405  
 Val Val Thr His Glu Asp Cys Ile Pro Glu Val Lys Ile Ala Tyr Ile  
 1410 1415 1420  
 Asn Phe Leu Asn His Cys Tyr Val Asp Thr Glu Val Glu Met Lys Glu  
 1425 1430 1435 1440  
 Ile Tyr Thr Ser Asn His Met Trp Lys Leu Phe Glu Asn Phe Leu Val  
 1445 1450 1455  
 Asp Ile Cys Arg Ala Cys Asn Asn Thr Ser Asp Arg Lys His Ala Asp  
 1460 1465 1470  
 Ser Val Leu Glu Lys Tyr Val Thr Glu Ile Val Met Ser Ile Val Thr  
 1475 1480 1485  
 Thr Phe Phe Ser Ser Pro Phe Ser Asp Gln Ser Thr Thr Leu Gln Thr  
 1490 1495 1500  
 Arg Gln Pro Val Phe Val Gln Leu Leu Gln Gly Val Phe Arg Val Tyr  
 1505 1510 1515 1520  
 His Cys Asn Trp Leu Met Pro Ser Gln Lys Ala Ser Val Glu Ser Cys  
 1525 1530 1535  
 Ile Arg Val Leu Ser Asp Val Ala Lys Ser Arg Ala Ile Ala Ile Pro  
 1540 1545 1550

46

Asn	Gln	Thr	Leu	Glu	Ser	Leu	Thr	Glu	Tyr	Cys	Gln	Gly	Pro	Cys	His	2035	2040	2045
Glu	Asn	Gln	Asn	Cys	Ile	Ala	Thr	His	Glu	Ser	Asn	Gly	Ile	Asp	Ile	2050	2055	2060
Ile	Thr	Ala	Leu	Ile	Leu	Asn	Asp	Ile	Asn	Pro	Leu	Gly	Lys	Lys	Arg	2065	2070	2075
Met	Asp	Leu	Val	Leu	Glu	Leu	Lys	Asn	Asn	Ala	Ser	Lys	Leu	Leu	Leu	2085	2090	2095
Ala	Ile	Met	Glu	Ser	Arg	His	Asp	Ser	Glu	Asn	Ala	Glu	Arg	Ile	Leu	2100	2105	2110
Tyr	Asn	Met	Arg	Pro	Lys	Glu	Leu	Val	Glu	Val	Ile	Lys	Lys	Ala	Tyr	2115	2120	2125
Met	Gln	Gly	Glu	Val	Glu	Phe	Glu	Asp	Gly	Glu	Asn	Gly	Glu	Asp	Gly	2130	2135	2140
Ala	Ala	Ser	Pro	Arg	Asn	Val	Gly	His	Asn	Ile	Tyr	Ile	Leu	Ala	His	2145	2150	2155
Gln	Leu	Ala	Arg	His	Asn	Lys	Glu	Leu	Gln	Thr	Met	Leu	Lys	Pro	Gly	2165	2170	2175
Gly	Gln	Val	Asp	Gly	Asp	Glu	Ala	Leu	Glu	Phe	Tyr	Ala	Lys	His	Thr	2180	2185	2190
Ala	Gln	Ile	Glu	Ile	Val	Arg	Leu	Asp	Arg	Thr	Met	Glu	Gln	Ile	Val	2195	2200	2205
Phe	Pro	Val	Pro	Ser	Ile	Cys	Glu	Phe	Leu	Thr	Lys	Glu	Ser	Lys	Leu	2210	2215	2220
Arg	Ile	Tyr	Tyr	Thr	Thr	Glu	Arg	Asp	Glu	Gln	Gly	Ser	Lys	Ile	Asn	2225	2230	2235
Asp	Phe	Phe	Leu	Arg	Ser	Glu	Asp	Leu	Phe	Asn	Glu	Met	Asn	Trp	Gln	2245	2250	2255
Lys	Lys	Leu	Arg	Ala	Gln	Pro	Val	Leu	Tyr	Trp	Cys	Ala	Arg	Asn	Met	2260	2265	2270
Ser	Phe	Trp	Ser	Ser	Ile	Ser	Phe	Asn	Leu	Ala	Val	Leu	Met	Asn	Leu	2275	2280	2285
Leu	Val	Ala	Phe	Phe	Tyr	Pro	Phe	Lys	Gly	Val	Arg	Gly	Gly	Thr	Leu	2290	2295	2300
Glu	Pro	His	Trp	Ser	Gly	Leu	Leu	Trp	Thr	Ala	Met	Leu	Ile	Ser	Leu	2305	2310	2315
Ala	Ile	Val	Ile	Ala	Leu	Pro	Lys	Pro	His	Gly	Ile	Arg	Ala	Leu	Ile	2325	2330	2335
Ala	Ser	Thr	Ile	Leu	Arg	Leu	Ile	Phe	Ser	Val	Gly	Leu	Gln	Pro	Thr	2340	2345	2350
Leu	Phe	Leu	Leu	Gly	Ala	Phe	Asn	Val	Cys	Asn	Lys	Ile	Ile	Phe	Leu	2355	2360	2365
Met	Ser	Phe	Val	Gly	Asn	Cys	Gly	Thr	Phe	Thr	Arg	Gly	Tyr	Arg	Ala	2370	2375	2380
Met	Val	Leu	Asp	Val	Glu	Phe	Leu	Tyr	His	Leu	Leu	Tyr	Leu	Leu	Ile	2385	2390	2395
Cys	Ala	Met	Gly	Leu	Phe	Val	His	Glu	Phe	Phe	Tyr	Ser	Leu	Leu	Leu	2405	2410	2415
Phe	Asp	Leu	Val	Tyr	Arg	Glu	Glu	Thr	Leu	Leu	Asn	Val	Ile	Lys	Ser	2420	2425	2430
Val	Thr	Arg	Asn	Gly	Arg	Pro	Ile	Ile	Leu	Thr	Ala	Ala	Leu	Ala	Leu	2435	2440	2445
Ile	Leu	Val	Tyr	Leu	Phe	Ser	Ile	Val	Gly	Tyr	Leu	Phe	Phe	Lys	Asp	2450	2455	2460
Asp	Phe	Ile	Leu	Glu	Val	Asp	Arg	Leu	Pro	Asn	Glu	Thr	Ala	Gly	Pro	2465	2470	2475
Glu	Thr	Gly	Glu	Ser	Leu	Ala	Asn	Asp	Phe	Leu	Tyr	Ser	Asp	Val	Cys	2485	2490	2495
Arg	Val	Glu	Thr	Gly	Glu	Asn	Cys	Thr	Ser	Pro	Ala	Pro	Lys	Glu	Glu	2500	2505	2510

Leu Leu Pro Val Glu Glu Thr Glu Gln Asp Lys Glu His Thr Cys Glu  
 2515 2520 2525  
 Thr Leu Leu Met Cys Ile Val Thr Val Leu Ser His Gly Leu Arg Ser  
 2530 2535 2540  
 Gly Gly Gly Val Gly Asp Val Leu Arg Lys Pro Ser Lys Glu Glu Pro  
 2545 2550 2555 2560  
 Leu Phe Ala Ala Arg Val Ile Tyr Asp Leu Leu Phe Phe Phe Met Val  
 2565 2570 2575  
 Ile Ile Ile Val Leu Asn Leu Ile Phe Gly Val Ile Ile Asp Thr Phe  
 2580 2585 2590  
 Ala Asp Leu Arg Ser Glu Lys Gln Lys Lys Glu Glu Ile Leu Lys Thr  
 2595 2600 2605  
 Thr Cys Phe Ile Cys Gly Leu Glu Arg Asp Lys Phe Asp Asn Lys Thr  
 2610 2615 2620  
 Val Thr Phe Glu Glu His Ile Lys Glu Glu His Asn Met Trp His Tyr  
 2625 2630 2635 2640  
 Leu Cys Phe Ile Val Leu Val Lys Val Lys Asp Ser Thr Glu Tyr Thr  
 2645 2650 2655  
 Gly Pro Glu Ser Tyr Val Ala Glu Met Ile Arg Glu Arg Asn Leu Asp  
 2660 2665 2670  
 Trp Phe Pro Arg Met Arg Ala Met Ser Leu Val Ser Ser Asp Ser Glu  
 2675 2680 2685  
 Gly Glu Gln Asn Glu Leu Arg Asn Leu Gln Glu Lys Leu Glu Ser Thr  
 2690 2695 2700  
 Met Lys Leu Val Thr Asn Leu Ser Gly Gln Leu Ser Glu Leu Lys Asp  
 2705 2710 2715 2720  
 Gln Met Thr Glu Gln Arg Lys Gln Lys Gln Arg Ile Gly Leu Leu Gly  
 2725 2730 2735  
 His Pro Pro His Met Asn Val Asn Pro Gln Gln Pro Ala  
 2740 2745

&lt;210&gt; 9

&lt;211&gt; 2710

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

 <223> Description of Artificial Sequence:/note =  
 synthetic construct

&lt;400&gt; 9

Met Ser Asp Lys Met Ser Ser Phe Leu His Ile Gly Asp Ile Cys Ser  
 1 5 10 15  
 Leu Tyr Ala Glu Gly Ser Thr Asn Gly Phe Ile Ser Thr Leu Gly Leu  
 20 25 30  
 Val Asp Asp Arg Cys Val Val Gln Pro Glu Ala Gly Asp Leu Asn Asn  
 35 40 45  
 Pro Pro Lys Lys Phe Arg Asp Cys Leu Phe Lys Leu Cys Pro Met Asn  
 50 55 60  
 Arg Tyr Ser Ala Gln Lys Gln Phe Trp Lys Ala Ala Lys Pro Gly Ala  
 65 70 75 80  
 Asn Ser Thr Thr Asp Ala Val Leu Leu Asn Lys Leu His His Ala Ala  
 85 90 95  
 Asp Leu Glu Lys Lys Gln Asn Glu Thr Glu Asn Arg Lys Leu Leu Gly  
 100 105 110  
 Thr Val Ile Gln Tyr Gly Asn Val Ile Gln Leu Leu His Leu Lys Ser  
 115 120 125  
 Asn Lys Tyr Leu Thr Val Asn Lys Arg Leu Pro Ala Leu Leu Glu Lys  
 130 135 140



Asn	Ala	Met	Arg	Val	Thr	Leu	Asp	Glu	Ala	Gly	Asn	Glu	Gly	Ser	Trp
145					150					155					160
Phe	Tyr	Ile	Gln	Pro	Phe	Tyr	Lys	Leu	Arg	Ser	Ile	Gly	Asp	Ser	Val
				165					170					175	
Val	Ile	Gly	Asp	Lys	Val	Val	Leu	Asn	Pro	Val	Asn	Ala	Gly	Gln	Pro
			180					185					190		
Leu	His	Ala	Ser	Ser	His	Gln	Leu	Val	Asp	Asn	Pro	Gly	Cys	Asn	Glu
	195						200					205			
Val	Asn	Ser	Val	Asn	Cys	Asn	Thr	Ser	Trp	Lys	Ile	Val	Leu	Phe	Met
	210					215					220				
Lys	Trp	Ser	Asp	Asn	Lys	Asp	Asp	Ile	Leu	Lys	Gly	Gly	Asp	Val	Val
225				230						235					240
Arg	Leu	Phe	His	Ala	Glu	Gln	Glu	Lys	Phe	Leu	Thr	Cys	Asp	Glu	His
				245					250					255	
Arg	Lys	Lys	Gln	His	Val	Phe	Leu	Arg	Thr	Thr	Gly	Arg	Gln	Ser	Ala
			260					265					270		
Thr	Ser	Ala	Thr	Ser	Ser	Lys	Ala	Leu	Trp	Glu	Val	Glu	Val	Val	Gln
	275						280					285			
His	Asp	Pro	Cys	Arg	Gly	Gly	Ala	Gly	Tyr	Trp	Asn	Ser	Leu	Phe	Arg
	290				295						300				
Phe	Lys	His	Leu	Ala	Thr	Gly	His	Tyr	Leu	Ala	Ala	Glu	Val	Asp	Pro
305					310					315					320
Asp	Phe	Glu	Glu	Glu	Cys	Leu	Glu	Phe	Gln	Pro	Ser	Val	Asp	Pro	Asp
				325					330					335	
Gln	Asp	Ala	Ser	Arg	Ser	Arg	Leu	Arg	Asn	Ala	Gln	Glu	Lys	Met	Val
			340					345					350		
Tyr	Ser	Leu	Val	Ser	Val	Pro	Glu	Gly	Asn	Asp	Ile	Ser	Ser	Ile	Phe
		355				360						365			
Glu	Leu	Asp	Pro	Thr	Thr	Leu	Arg	Gly	Gly	Asp	Ser	Leu	Val	Pro	Arg
	370					375					380				
Asn	Ser	Tyr	Val	Arg	Leu	Arg	His	Leu	Cys	Thr	Asn	Thr	Trp	Val	His
385					390					395					400
Ser	Thr	Asn	Ile	Pro	Ile	Asp	Lys	Glu	Glu	Glu	Lys	Pro	Val	Met	Leu
				405					410					415	
Lys	Ile	Gly	Thr	Ser	Pro	Leu	Lys	Glu	Asp	Lys	Glu	Ala	Phe	Ala	Ile
			420					425					430		
Val	Pro	Val	Ser	Pro	Ala	Glu	Val	Arg	Asp	Leu	Asp	Phe	Ala	Asn	Asp
		435					440					445			
Ala	Ser	Lys	Val	Leu	Gly	Ser	Ile	Ala	Gly	Lys	Leu	Glu	Lys	Gly	Thr
	450					455					460				
Ile	Thr	Gln	Asn	Glu	Arg	Arg	Ser	Val	Thr	Lys	Leu	Leu	Glu	Asp	Leu
465					470					475					480
Val	Tyr	Phe	Val	Thr	Gly	Gly	Thr	Asn	Ser	Gly	Gln	Asp	Val	Leu	Glu
				485					490					495	
Val	Val	Phe	Ser	Lys	Pro	Asn	Arg	Glu	Arg	Gln	Lys	Leu	Met	Arg	Glu
			500					505					510		
Gln	Asn	Ile	Leu	Lys	Gln	Ile	Phe	Lys	Leu	Leu	Gln	Ala	Pro	Phe	Thr
		515					520					525			
Asp	Cys	Gly	Asp	Gly	Pro	Met	Leu	Arg	Leu	Glu	Glu	Leu	Gly	Asp	Gln
	530					535					540				
Arg	His	Ala	Pro	Phe	Arg	His	Ile	Cys	Arg	Leu	Cys	Tyr	Arg	Val	Leu
545					550					555					560
Arg	His	Ser	Gln	Gln	Asp	Tyr	Arg	Lys	Asn	Gln	Glu	Tyr	Ile	Ala	Lys
				565					570					575	
Gln	Phe	Gly	Phe	Met	Gln	Lys	Gln	Ile	Gly	Tyr	Asp	Val	Leu	Ala	Glu
			580					585					590		
Asp	Thr	Ile	Thr	Ala	Leu	Leu	His	Asn	Asn	Arg	Lys	Leu	Leu	Glu	Lys
		595					600					605			
His	Ile	Thr	Ala	Ala	Glu	Ile	Asp	Thr	Phe	Val	Ser	Leu	Val	Arg	Lys
	610					615					620				

Asn	Arg	Glu	Pro	Arg	Phe	Leu	Asp	Tyr	Leu	Ser	Asp	Leu	Cys	Val	Ser	625	630	635	640
Met	Asn	Lys	Ser	Ile	Pro	Val	Thr	Gln	Glu	Leu	Ile	Cys	Lys	Ala	Val	645	650	655	
Leu	Asn	Pro	Thr	Asn	Ala	Asp	Ile	Leu	Ile	Glu	Thr	Lys	Leu	Val	Leu	660	665	670	
Ser	Arg	Phe	Glu	Phe	Glu	Gly	Val	Ser	Thr	Gly	Glu	Asn	Ala	Leu	Glu	675	680	685	
Ala	Gly	Glu	Asp	Glu	Glu	Glu	Val	Trp	Leu	Phe	Trp	Arg	Asp	Ser	Asn	690	695	700	
Lys	Glu	Ile	Arg	Ser	Lys	Ser	Val	Arg	Glu	Leu	Ala	Gln	Asp	Ala	Lys	705	710	715	720
Glu	Gly	Gln	Lys	Glu	Asp	Arg	Asp	Val	Leu	Ser	Tyr	Tyr	Arg	Tyr	Gln	725	730	735	
Leu	Asn	Leu	Phe	Ala	Arg	Met	Cys	Leu	Asp	Arg	Gln	Tyr	Leu	Ala	Ile	740	745	750	
Asn	Glu	Ile	Ser	Gly	Gln	Leu	Asp	Val	Asp	Leu	Ile	Leu	Arg	Cys	Met	755	760	765	
Ser	Asp	Glu	Asn	Leu	Pro	Tyr	Asp	Leu	Arg	Ala	Ser	Phe	Cys	Arg	Leu	770	775	780	
Met	Leu	His	Met	His	Val	Asp	Arg	Asp	Pro	Gln	Glu	Gln	Val	Thr	Pro	785	790	795	800
Val	Lys	Tyr	Ala	Arg	Leu	Trp	Ser	Glu	Ile	Pro	Ser	Glu	Ile	Ala	Ile	805	810	815	
Asp	Asp	Tyr	Asp	Ser	Ser	Gly	Ala	Ser	Lys	Asp	Glu	Ile	Lys	Glu	Arg	820	825	830	
Phe	Ala	Gln	Thr	Met	Glu	Phe	Val	Glu	Glu	Tyr	Leu	Arg	Asp	Val	Val	835	840	845	
Cys	Gln	Arg	Phe	Pro	Phe	Ser	Asp	Lys	Glu	Lys	Asn	Lys	Leu	Thr	Phe	850	855	860	
Glu	Val	Val	Asn	Leu	Ala	Arg	Asn	Leu	Ile	Tyr	Phe	Gly	Phe	Tyr	Asn	865	870	875	880
Phe	Ser	Asp	Leu	Leu	Arg	Leu	Thr	Lys	Ile	Leu	Leu	Ala	Ile	Leu	Asp	885	890	895	
Cys	Val	His	Val	Thr	Thr	Ile	Phe	Pro	Ile	Ser	Lys	Met	Thr	Lys	Gly	900	905	910	
Glu	Glu	Asn	Lys	Gly	Ser	Asn	Val	Met	Arg	Ser	Ile	His	Gly	Val	Gly	915	920	925	
Glu	Leu	Met	Thr	Gln	Val	Val	Leu	Arg	Gly	Gly	Gly	Phe	Leu	Pro	Met	930	935	940	
Thr	Pro	Met	Ala	Ala	Ala	Pro	Glu	Gly	Asn	Val	Lys	Gln	Ala	Glu	Pro	945	950	955	960
Glu	Lys	Glu	Asp	Ile	Met	Val	Met	Asp	Thr	Lys	Leu	Lys	Ile	Ile	Glu	965	970	975	
Ile	Leu	Gln	Phe	Ile	Leu	Asn	Val	Arg	Leu	Asp	Tyr	Arg	Ile	Ser	Cys	980	985	990	
Leu	Leu	Cys	Ile	Phe	Lys	Arg	Glu	Phe	Asp	Glu	Ser	Asn	Ser	Gln	Ser	995	1000	1005	
Ser	Glu	Thr	Ser	Ser	Gly	Asn	Ser	Ser	Gln	Glu	Gly	Pro	Ser	Asn	Val	1010	1015	1020	
Pro	Gly	Ala	Leu	Asp	Phe	Glu	His	Ile	Glu	Glu	Gln	Ala	Glu	Gly	Ile	1025	1030	1035	1040
Phe	Gly	Gly	Ser	Glu	Glu	Asn	Thr	Pro	Leu	Asp	Leu	Asp	Asp	His	Gly	1045	1050	1055	
Gly	Arg	Thr	Phe	Leu	Arg	Val	Leu	Leu	His	Leu	Thr	Met	His	Asp	Tyr	1060	1065	1070	
Pro	Pro	Leu	Val	Ser	Gly	Ala	Leu	Gln	Leu	Leu	Phe	Arg	His	Phe	Ser	1075	1080	1085	
Gln	Arg	Gln	Glu	Val	Leu	Gln	Ala	Phe	Lys	Gln	Val	Gln	Leu	Leu	Val	1090	1095	1100	

Thr Ser Gln Asp Val Asp Asn Tyr Lys Gln Ile Lys Gln Asp Leu Asp  
 1105 1110 1115 1120  
 Gln Leu Arg Ser Ile Val Glu Lys Ser Glu Leu Trp Val Tyr Lys Gly  
 1125 1130 1135  
 Gln Gly Pro Asp Glu Pro Met Asp Gly Ala Ser Gly Glu Asn Glu His  
 1140 1145 1150  
 Lys Lys Thr Glu Glu Gly Thr Ser Lys Pro Leu Lys His Glu Ser Thr  
 1155 1160 1165  
 Ser Ser Tyr Asn Tyr Arg Val Val Lys Glu Ile Leu Ile Arg Leu Ser  
 1170 1175 1180  
 Lys Leu Cys Val Gln Glu Ser Ala Ser Val Arg Lys Ser Arg Lys Gln  
 1185 1190 1195 1200  
 Gln Gln Arg Leu Leu Arg Asn Met Gly Ala His Ala Val Val Leu Glu  
 1205 1210 1215  
 Leu Leu Gln Ile Pro Tyr Glu Lys Ala Glu Asp Thr Lys Met Gln Glu  
 1220 1225 1230  
 Ile Met Arg Leu Ala His Glu Phe Leu Gln Asn Phe Cys Ala Gly Asn  
 1235 1240 1245  
 Gln Gln Asn Gln Ala Leu Leu His Lys His Ile Asn Leu Phe Leu Asn  
 1250 1255 1260  
 Pro Gly Ile Leu Glu Ala Val Thr Met Gln His Ile Phe Met Asn Asn  
 1265 1270 1275 1280  
 Phe Gln Leu Cys Ser Glu Ile Asn Glu Arg Val Val Gln His Phe Val  
 1285 1290 1295  
 His Cys Ile Glu Thr His Gly Arg Asn Val Gln Tyr Ile Lys Phe Leu  
 1300 1305 1310  
 Gln Thr Ile Val Lys Ala Glu Gly Lys Phe Ile Lys Lys Cys Gln Asp  
 1315 1320 1325  
 Met Val Met Ala Glu Leu Val Asn Ser Gly Glu Asp Val Leu Val Phe  
 1330 1335 1340  
 Tyr Asn Asp Arg Ala Ser Phe Gln Thr Leu Ile Gln Met Met Arg Ser  
 1345 1350 1355 1360  
 Glu Arg Asp Arg Met Asp Glu Asn Ser Pro Leu Phe Met Tyr His Ile  
 1365 1370 1375  
 His Leu Val Glu Leu Leu Ala Val Cys Thr Glu Gly Lys Asn Val Tyr  
 1380 1385 1390  
 Thr Glu Ile Lys Cys Asn Ser Leu Leu Pro Leu Asp Asp Ile Val Arg  
 1395 1400 1405  
 Val Val Thr His Glu Asp Cys Ile Pro Glu Val Lys Ile Ala Tyr Ile  
 1410 1415 1420  
 Asn Phe Leu Asn His Cys Tyr Val Asp Thr Glu Val Glu Met Lys Glu  
 1425 1430 1435 1440  
 Ile Tyr Thr Ser Asn His Met Trp Lys Leu Phe Glu Asn Phe Leu Val  
 1445 1450 1455  
 Asp Ile Cys Arg Ala Cys Asn Asn Thr Ser Asp Arg Lys His Ala Asp  
 1460 1465 1470  
 Ser Val Leu Glu Lys Tyr Val Thr Glu Ile Val Met Ser Ile Val Thr  
 1475 1480 1485  
 Thr Phe Phe Ser Ser Pro Phe Ser Asp Gln Ser Thr Thr Leu Gln Thr  
 1490 1495 1500  
 Arg Gln Pro Val Phe Val Gln Leu Leu Gln Gly Val Phe Arg Val Tyr  
 1505 1510 1515 1520  
 His Cys Asn Trp Leu Met Pro Ser Gln Lys Ala Ser Val Glu Ser Cys  
 1525 1530 1535  
 Ile Arg Val Leu Ser Asp Val Ala Lys Ser Arg Ala Ile Ala Ile Pro  
 1540 1545 1550  
 Val Asp Leu Asp Ser Gln Val Asn Asn Leu Phe Leu Lys Ser His Asn  
 1555 1560 1565  
 Ile Val Gln Lys Thr Ala Met Asn Trp Arg Leu Ser Ala Arg Asn Ala  
 1570 1575 1580

Ala Arg Arg Asp Glu Val Leu Ala Ala Ser Arg Asp Tyr Arg Asn Ile  
 1585 1590 1595 1600  
 Ile Glu Arg Leu Gln Asp Ile Val Ser Ala Leu Glu Asp Arg Leu Arg  
 1605 1610 1615  
 Pro Leu Val Gln Ala Glu Leu Ser Val Leu Val Asp Val Leu His Arg  
 1620 1625 1630  
 Pro Glu Leu Leu Phe Pro Glu Asn Thr Asp Ala Arg Arg Lys Cys Glu  
 1635 1640 1645  
 Ser Gly Gly Phe Ile Cys Lys Leu Ile Lys His Thr Lys Gln Leu Leu  
 1650 1655 1660  
 Glu Glu Asn Glu Glu Lys Leu Cys Ile Lys Val Leu Gln Thr Leu Arg  
 1665 1670 1675 1680  
 Glu Met Met Thr Lys Asp Arg Gly Tyr Gly Glu Lys Gly Glu Ala Leu  
 1685 1690 1695  
 Arg Gln Ile Leu Val Asn Arg Tyr Tyr Gly Asn Ile Arg Pro Ser Gly  
 1700 1705 1710  
 Arg Arg Glu Glu Leu Thr Ser Phe Gly Asn Gly Pro Leu Ser Pro Gly  
 1715 1720 1725  
 Gly Pro Ser Lys Pro Gly Gly Gly Gly Gly Pro Gly Ser Gly Ser  
 1730 1735 1740  
 Thr Ser Arg Gly Glu Met Ser Leu Ala Glu Val Gln Cys His Leu Asp  
 1745 1750 1755 1760  
 Lys Glu Gly Ala Ser Asn Leu Val Ile Asp Leu Ile Met Asn Ala Ser  
 1765 1770 1775  
 Ser Asp Arg Val Phe His Glu Ser Ile Leu Leu Ala Ile Ala Leu Leu  
 1780 1785 1790  
 Glu Gly Gly Asn Thr Thr Ile Gln His Ser Phe Phe Cys Arg Leu Thr  
 1795 1800 1805  
 Glu Asp Lys Lys Ser Glu Lys Phe Phe Lys Val Phe Tyr Asp Arg Met  
 1810 1815 1820  
 Lys Val Ala Gln Gln Glu Ile Lys Ala Thr Val Thr Val Asn Thr Ser  
 1825 1830 1835 1840  
 Asp Leu Gly Asn Lys Lys Lys Asp Asp Glu Val Asp Arg Asp Ala Pro  
 1845 1850 1855  
 Ser Arg Lys Lys Ala Lys Glu Pro Thr Thr Gln Ile Thr Glu Glu Val  
 1860 1865 1870  
 Arg Asp Gln Leu Leu Glu Ala Ser Ala Ala Thr Arg Lys Ala Phe Thr  
 1875 1880 1885  
 Thr Phe Arg Arg Glu Ala Asp Pro Asp Asp His Tyr Gln Ser Gly Glu  
 1890 1895 1900  
 Gly Thr Gln Ala Thr Thr Asp Lys Ala Lys Asp Asp Leu Glu Met Ser  
 1905 1910 1915 1920  
 Ala Val Ile Thr Ile Met Gln Pro Ile Leu Arg Phe Leu Gln Leu Leu  
 1925 1930 1935  
 Cys Glu Asn His Asn Arg Asp Leu Gln Asn Phe Leu Arg Cys Gln Asn  
 1940 1945 1950  
 Asn Lys Thr Asn Tyr Asn Leu Val Cys Glu Thr Leu Gln Phe Leu Asp  
 1955 1960 1965  
 Cys Ile Cys Gly Ser Thr Thr Gly Gly Leu Gly Leu Leu Gly Leu Tyr  
 1970 1975 1980  
 Ile Asn Glu Lys Asn Val Ala Leu Ile Asn Gln Thr Leu Glu Ser Leu  
 1985 1990 1995 2000  
 Thr Glu Tyr Cys Gln Gly Pro Cys His Glu Asn Gln Asn Cys Ile Ala  
 2005 2010 2015  
 Thr His Glu Ser Asn Gly Ile Asp Ile Ile Thr Ala Leu Ile Leu Asn  
 2020 2025 2030  
 Asp Ile Asn Pro Leu Gly Lys Lys Arg Met Asp Leu Val Leu Glu Leu  
 2035 2040 2045  
 Lys Asn Asn Ala Ser Lys Leu Leu Leu Ala Ile Met Glu Ser Arg His  
 2050 2055 2060

Asp Ser Glu Asn Ala Glu Arg Ile Leu Tyr Asn Met Arg Pro Lys Glu  
 2065 2070 2075 2080  
 Leu Val Glu Val Ile Lys Lys Ala Tyr Met Gln Gly Glu Val Glu Phe  
 2085 2090 2095  
 Glu Asp Gly Glu Asn Gly Glu Asp Gly Ala Ala Ser Pro Arg Asn Val  
 2100 2105 2110  
 Gly His Asn Ile Tyr Ile Leu Ala His Gln Leu Ala Arg His Asn Lys  
 2115 2120 2125  
 Glu Leu Gln Thr Met Leu Lys Pro Gly Gly Gln Val Asp Gly Asp Glu  
 2130 2135 2140  
 Ala Leu Glu Phe Tyr Ala Lys His Thr Ala Gln Ile Glu Ile Val Arg  
 2145 2150 2155 2160  
 Leu Asp Arg Thr Met Glu Gln Ile Val Phe Pro Val Pro Ser Ile Cys  
 2165 2170 2175  
 Glu Phe Leu Thr Lys Glu Ser Lys Leu Arg Ile Tyr Tyr Thr Thr Glu  
 2180 2185 2190  
 Arg Asp Glu Gln Gly Ser Lys Ile Asn Asp Phe Phe Leu Arg Ser Glu  
 2195 2200 2205  
 Asp Leu Phe Asn Glu Met Asn Trp Gln Lys Lys Leu Arg Ala Gln Pro  
 2210 2215 2220  
 Val Leu Tyr Trp Cys Ala Arg Asn Met Ser Phe Trp Ser Ser Ile Ser  
 2225 2230 2235 2240  
 Phe Asn Leu Ala Val Leu Met Asn Leu Leu Val Ala Phe Phe Tyr Pro  
 2245 2250 2255  
 Phe Lys Gly Val Arg Gly Gly Thr Leu Glu Pro His Trp Ser Gly Leu  
 2260 2265 2270  
 Leu Trp Thr Ala Met Leu Ile Ser Leu Ala Ile Val Ile Ala Leu Pro  
 2275 2280 2285  
 Lys Pro His Gly Ile Arg Ala Leu Ile Ala Ser Thr Ile Leu Arg Leu  
 2290 2295 2300  
 Ile Phe Ser Val Gly Leu Gln Pro Thr Leu Phe Leu Leu Gly Ala Phe  
 2305 2310 2315 2320  
 Asn Val Cys Asn Lys Ile Ile Phe Leu Met Ser Phe Val Gly Asn Cys  
 2325 2330 2335  
 Gly Thr Phe Thr Arg Gly Tyr Arg Ala Met Val Leu Asp Val Glu Phe  
 2340 2345 2350  
 Leu Tyr His Leu Leu Tyr Leu Leu Ile Cys Ala Met Gly Leu Phe Val  
 2355 2360 2365  
 His Glu Phe Phe Tyr Ser Leu Leu Leu Phe Asp Leu Val Tyr Arg Glu  
 2370 2375 2380  
 Glu Thr Leu Leu Asn Val Ile Lys Ser Val Thr Arg Asn Gly Arg Pro  
 2385 2390 2395 2400  
 Ile Ile Leu Thr Ala Ala Leu Ala Leu Ile Leu Val Tyr Leu Phe Ser  
 2405 2410 2415  
 Ile Val Gly Tyr Leu Phe Phe Lys Asp Asp Phe Ile Leu Glu Val Asp  
 2420 2425 2430  
 Arg Leu Pro Asn Glu Thr Ala Gly Pro Glu Thr Gly Glu Ser Leu Ala  
 2435 2440 2445  
 Asn Asp Phe Leu Tyr Ser Asp Val Cys Arg Val Glu Thr Gly Glu Asn  
 2450 2455 2460  
 Cys Thr Ser Pro Ala Pro Lys Glu Glu Leu Leu Pro Val Glu Glu Thr  
 2465 2470 2475 2480  
 Glu Gln Asp Lys Glu His Thr Cys Glu Thr Leu Leu Met Cys Ile Val  
 2485 2490 2495  
 Thr Val Leu Ser His Gly Leu Arg Ser Gly Gly Gly Val Gly Asp Val  
 2500 2505 2510  
 Leu Arg Lys Pro Ser Lys Glu Glu Pro Leu Phe Ala Ala Arg Val Ile  
 2515 2520 2525  
 Tyr Asp Leu Leu Phe Phe Phe Met Val Ile Ile Ile Val Leu Asn Leu  
 2530 2535 2540

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Ile Phe Gly Val Ile Ile Asp Thr Phe Ala Asp Leu Arg Ser Glu Lys
2545                2550                2555                2560
Gln Lys Lys Glu Glu Ile Leu Lys Thr Thr Cys Phe Ile Cys Gly Leu
                2565                2570                2575
Glu Arg Asp Lys Phe Asp Asn Lys Thr Val Thr Phe Glu Glu His Ile
                2580                2585                2590
Lys Glu Glu His Asn Met Trp His Tyr Leu Cys Phe Ile Val Leu Val
                2595                2600                2605
Lys Val Lys Asp Ser Thr Glu Tyr Thr Gly Pro Glu Ser Tyr Val Ala
                2610                2615                2620
Glu Met Ile Arg Glu Arg Asn Leu Asp Trp Phe Pro Arg Met Arg Ala
2625                2630                2635                2640
Met Ser Leu Val Ser Ser Asp Ser Glu Gly Glu Gln Asn Glu Leu Arg
                2645                2650                2655
Asn Leu Gln Glu Lys Leu Glu Ser Thr Met Lys Leu Val Thr Asn Leu
                2660                2665                2670
Ser Gly Gln Leu Ser Glu Leu Lys Asp Gln Met Thr Glu Gln Arg Lys
                2675                2680                2685
Gln Lys Gln Arg Ile Gly Leu Leu Gly His Pro Pro His Met Asn Val
                2690                2695                2700
Asn Pro Gln Gln Pro Ala
2705                2710

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&lt;210&gt; 10

&lt;211&gt; 2749

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence:/note =  
synthetic construct

&lt;400&gt; 10

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Met Ser Asp Lys Met Ser Ser Phe Leu His Ile Gly Asp Ile Cys Ser
 1          5          10          15
Leu Tyr Ala Glu Gly Ser Thr Asn Gly Phe Ile Ser Thr Leu Gly Leu
          20          25          30
Val Asp Asp Arg Cys Val Val Gln Pro Glu Ala Gly Asp Leu Asn Asn
          35          40          45
Pro Pro Lys Lys Phe Arg Asp Cys Leu Phe Lys Leu Cys Pro Met Asn
          50          55          60
Arg Tyr Ser Ala Gln Lys Gln Phe Trp Lys Ala Ala Lys Pro Gly Ala
          65          70          75          80
Asn Ser Thr Thr Asp Ala Val Leu Leu Asn Lys Leu His His Ala Ala
          85          90          95
Asp Leu Glu Lys Lys Gln Asn Glu Thr Glu Asn Arg Lys Leu Leu Gly
          100         105         110
Thr Val Ile Gln Tyr Gly Asn Val Ile Gln Leu Leu His Leu Lys Ser
          115         120         125
Asn Lys Tyr Leu Thr Val Asn Lys Arg Leu Pro Ala Leu Leu Glu Lys
          130         135         140
Asn Ala Met Arg Val Thr Leu Asp Glu Ala Gly Asn Glu Gly Ser Trp
          145         150         155         160
Phe Tyr Ile Gln Pro Phe Tyr Lys Leu Arg Ser Ile Gly Asp Ser Val
          165         170         175
Val Ile Gly Asp Lys Val Val Leu Asn Pro Val Asn Ala Gly Gln Pro
          180         185         190
Leu His Ala Ser Ser His Gln Leu Val Asp Asn Pro Gly Cys Asn Glu
          195         200         205

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Val	Asn	Ser	Val	Asn	Cys	Asn	Thr	Ser	Trp	Lys	Ile	Val	Leu	Phe	Met
210						215					220				
Lys	Trp	Ser	Asp	Asn	Lys	Asp	Asp	Ile	Leu	Lys	Gly	Gly	Asp	Val	Val
225					230					235					240
Arg	Leu	Phe	His	Ala	Glu	Gln	Glu	Lys	Phe	Leu	Thr	Cys	Asp	Glu	His
				245					250					255	
Arg	Lys	Lys	Gln	His	Val	Phe	Leu	Arg	Thr	Thr	Gly	Arg	Gln	Ser	Ala
			260					265					270		
Thr	Ser	Ala	Thr	Ser	Ser	Lys	Ala	Leu	Trp	Glu	Val	Glu	Val	Val	Gln
		275					280						285		
His	Asp	Pro	Cys	Arg	Gly	Gly	Ala	Gly	Tyr	Trp	Asn	Ser	Leu	Phe	Arg
	290					295					300				
Phe	Lys	His	Leu	Ala	Thr	Gly	His	Tyr	Leu	Ala	Ala	Glu	Val	Asp	Pro
305					310					315					320
Asp	Phe	Glu	Glu	Glu	Cys	Leu	Glu	Phe	Gln	Pro	Ser	Val	Asp	Pro	Asp
				325					330					335	
Gln	Asp	Ala	Ser	Arg	Ser	Arg	Leu	Arg	Asn	Ala	Gln	Glu	Lys	Met	Val
			340					345					350		
Tyr	Ser	Leu	Val	Ser	Val	Pro	Glu	Gly	Asn	Asp	Ile	Ser	Ser	Ile	Phe
		355					360						365		
Glu	Leu	Asp	Pro	Thr	Thr	Leu	Arg	Gly	Gly	Asp	Ser	Leu	Val	Pro	Arg
	370					375					380				
Asn	Ser	Tyr	Val	Arg	Leu	Arg	His	Leu	Cys	Thr	Asn	Thr	Trp	Val	His
385					390					395					400
Ser	Thr	Asn	Ile	Pro	Ile	Asp	Lys	Glu	Glu	Glu	Lys	Pro	Val	Met	Leu
				405					410					415	
Lys	Ile	Gly	Thr	Ser	Pro	Leu	Lys	Glu	Asp	Lys	Glu	Ala	Phe	Ala	Ile
			420					425					430		
Val	Pro	Val	Ser	Pro	Ala	Glu	Val	Arg	Asp	Leu	Asp	Phe	Ala	Asn	Asp
		435					440					445			
Ala	Ser	Lys	Val	Leu	Gly	Ser	Ile	Ala	Gly	Lys	Leu	Glu	Lys	Gly	Thr
	450					455					460				
Ile	Thr	Gln	Asn	Glu	Arg	Arg	Ser	Val	Thr	Lys	Leu	Leu	Glu	Asp	Leu
465					470					475					480
Val	Tyr	Phe	Val	Thr	Gly	Gly	Thr	Asn	Ser	Gly	Gln	Asp	Val	Leu	Glu
				485					490					495	
Val	Val	Phe	Ser	Lys	Pro	Asn	Arg	Glu	Arg	Gln	Lys	Leu	Met	Arg	Glu
			500					505					510		
Gln	Asn	Ile	Leu	Lys	Gln	Ile	Phe	Lys	Leu	Leu	Gln	Ala	Pro	Phe	Thr
		515					520					525			
Asp	Cys	Gly	Asp	Gly	Pro	Met	Leu	Arg	Leu	Glu	Glu	Leu	Gly	Asp	Gln
	530					535					540				
Arg	His	Ala	Pro	Phe	Arg	His	Ile	Cys	Arg	Leu	Cys	Tyr	Arg	Val	Leu
545					550					555					560
Arg	His	Ser	Gln	Gln	Asp	Tyr	Arg	Lys	Asn	Gln	Glu	Tyr	Ile	Ala	Lys
				565					570					575	
Gln	Phe	Gly	Phe	Met	Gln	Lys	Gln	Ile	Gly	Tyr	Asp	Val	Leu	Ala	Glu
			580					585					590		
Asp	Thr	Ile	Thr	Ala	Leu	Leu	His	Asn	Asn	Arg	Lys	Leu	Leu	Glu	Lys
		595					600					605			
His	Ile	Thr	Ala	Ala	Glu	Ile	Asp	Thr	Phe	Val	Ser	Leu	Val	Arg	Lys
	610					615					620				
Asn	Arg	Glu	Pro	Arg	Phe	Leu	Asp	Tyr	Leu	Ser	Asp	Leu	Cys	Val	Ser
625					630					635					640
Met	Asn	Lys	Ser	Ile	Pro	Val	Thr	Gln	Glu	Leu	Ile	Cys	Lys	Ala	Val
				645					650					655	
Leu	Asn	Pro	Thr	Asn	Ala	Asp	Ile	Leu	Ile	Glu	Thr	Lys	Leu	Val	Leu
			660					665					670		
Ser	Arg	Phe	Glu	Phe	Glu	Gly	Val	Ser	Thr	Gly	Glu	Asn	Ala	Leu	Glu
			675				680						685		

Ala	Gly	Glu	Asp	Glu	Glu	Glu	Val	Trp	Leu	Phe	Trp	Arg	Asp	Ser	Asn	690	695	700
Lys	Glu	Ile	Arg	Ser	Lys	Ser	Val	Arg	Glu	Leu	Ala	Gln	Asp	Ala	Lys	705	710	715
Glu	Gly	Gln	Lys	Glu	Asp	Arg	Asp	Val	Leu	Ser	Tyr	Tyr	Arg	Tyr	Gln	725	730	735
Leu	Asn	Leu	Phe	Ala	Arg	Met	Cys	Leu	Asp	Arg	Gln	Tyr	Leu	Ala	Ile	740	745	750
Asn	Glu	Ile	Ser	Gly	Gln	Leu	Asp	Val	Asp	Leu	Ile	Leu	Arg	Cys	Met	755	760	765
Ser	Asp	Glu	Asn	Leu	Pro	Tyr	Asp	Leu	Arg	Ala	Ser	Phe	Cys	Arg	Leu	770	775	780
Met	Leu	His	Met	His	Val	Asp	Arg	Asp	Pro	Gln	Glu	Gln	Val	Thr	Pro	785	790	795
Val	Lys	Tyr	Ala	Arg	Leu	Trp	Ser	Glu	Ile	Pro	Ser	Glu	Ile	Ala	Ile	805	810	815
Asp	Asp	Tyr	Asp	Ser	Ser	Gly	Ala	Ser	Lys	Asp	Glu	Ile	Lys	Glu	Arg	820	825	830
Phe	Ala	Gln	Thr	Met	Glu	Phe	Val	Glu	Glu	Tyr	Leu	Arg	Asp	Val	Val	835	840	845
Cys	Gln	Arg	Phe	Pro	Phe	Ser	Asp	Lys	Glu	Lys	Asn	Lys	Leu	Thr	Phe	850	855	860
Glu	Val	Val	Asn	Leu	Ala	Arg	Asn	Leu	Ile	Tyr	Phe	Gly	Phe	Tyr	Asn	865	870	875
Phe	Ser	Asp	Leu	Leu	Arg	Leu	Thr	Lys	Ile	Leu	Leu	Ala	Ile	Leu	Asp	885	890	895
Cys	Val	His	Val	Thr	Thr	Ile	Phe	Pro	Ile	Ser	Lys	Met	Thr	Lys	Gly	900	905	910
Glu	Glu	Asn	Lys	Gly	Ser	Asn	Val	Met	Arg	Ser	Ile	His	Gly	Val	Gly	915	920	925
Glu	Leu	Met	Thr	Gln	Val	Val	Leu	Arg	Gly	Gly	Gly	Phe	Leu	Pro	Met	930	935	940
Thr	Pro	Met	Ala	Ala	Ala	Pro	Glu	Gly	Asn	Val	Lys	Gln	Ala	Glu	Pro	945	950	955
Glu	Lys	Glu	Asp	Ile	Met	Val	Met	Asp	Thr	Lys	Leu	Lys	Ile	Ile	Glu	965	970	975
Ile	Leu	Gln	Phe	Ile	Leu	Asn	Val	Arg	Leu	Asp	Tyr	Arg	Ile	Ser	Cys	980	985	990
Leu	Leu	Cys	Ile	Phe	Lys	Arg	Glu	Phe	Asp	Glu	Ser	Asn	Ser	Gln	Ser	995	1000	1005
Ser	Glu	Thr	Ser	Ser	Gly	Asn	Ser	Ser	Gln	Glu	Gly	Pro	Ser	Asn	Val	1010	1015	1020
Pro	Gly	Ala	Leu	Asp	Phe	Glu	His	Ile	Glu	Glu	Gln	Ala	Glu	Gly	Ile	1025	1030	1035
Phe	Gly	Gly	Ser	Glu	Glu	Asn	Thr	Pro	Leu	Asp	Leu	Asp	Asp	His	Gly	1045	1050	1055
Gly	Arg	Thr	Phe	Leu	Arg	Val	Leu	Leu	His	Leu	Thr	Met	His	Asp	Tyr	1060	1065	1070
Pro	Pro	Leu	Val	Ser	Gly	Ala	Leu	Gln	Leu	Leu	Phe	Arg	His	Phe	Ser	1075	1080	1085
Gln	Arg	Gln	Glu	Val	Leu	Gln	Ala	Phe	Lys	Gln	Val	Gln	Leu	Leu	Val	1090	1095	1100
Thr	Ser	Gln	Asp	Val	Asp	Asn	Tyr	Lys	Gln	Ile	Lys	Gln	Asp	Leu	Asp	1105	1110	1115
Gln	Leu	Arg	Ser	Ile	Val	Glu	Lys	Ser	Glu	Leu	Trp	Val	Tyr	Lys	Gly	1125	1130	1135
Gln	Gly	Pro	Asp	Glu	Pro	Met	Asp	Gly	Ala	Ser	Gly	Glu	Asn	Glu	His	1140	1145	1150
Lys	Lys	Thr	Glu	Glu	Gly	Thr	Ser	Lys	Pro	Leu	Lys	His	Glu	Ser	Thr	1155	1160	1165



Ser Ser Tyr Asn Tyr Arg Val Val Lys Glu Ile Leu Ile Arg Leu Ser  
 1170 1175 1180  
 Lys Leu Cys Val Gln Glu Ser Ala Ser Val Arg Lys Ser Arg Lys Gln  
 1185 1190 1195 1200  
 Gln Gln Arg Leu Leu Arg Asn Met Gly Ala His Ala Val Val Leu Glu  
 1205 1210 1215  
 Leu Leu Gln Ile Pro Tyr Glu Lys Ala Glu Asp Thr Lys Met Gln Glu  
 1220 1225 1230  
 Ile Met Arg Leu Ala His Glu Phe Leu Gln Asn Phe Cys Ala Gly Asn  
 1235 1240 1245  
 Gln Gln Asn Gln Ala Leu Leu His Lys His Ile Asn Leu Phe Leu Asn  
 1250 1255 1260  
 Pro Gly Ile Leu Glu Ala Val Thr Met Gln His Ile Phe Met Asn Asn  
 1265 1270 1275 1280  
 Phe Gln Leu Cys Ser Glu Ile Asn Glu Arg Val Val Gln His Phe Val  
 1285 1290 1295  
 His Cys Ile Glu Thr His Gly Arg Asn Val Gln Tyr Ile Lys Phe Leu  
 1300 1305 1310  
 Gln Thr Ile Val Lys Ala Glu Gly Lys Phe Ile Lys Lys Cys Gln Asp  
 1315 1320 1325  
 Met Val Met Ala Glu Leu Val Asn Ser Gly Glu Asp Val Leu Val Phe  
 1330 1335 1340  
 Tyr Asn Asp Arg Ala Ser Phe Gln Thr Leu Ile Gln Met Met Arg Ser  
 1345 1350 1355 1360  
 Glu Arg Asp Arg Met Asp Glu Asn Ser Pro Leu Phe Met Tyr His Ile  
 1365 1370 1375  
 His Leu Val Glu Leu Leu Ala Val Cys Thr Glu Gly Lys Asn Val Tyr  
 1380 1385 1390  
 Thr Glu Ile Lys Cys Asn Ser Leu Leu Pro Leu Asp Asp Ile Val Arg  
 1395 1400 1405  
 Val Val Thr His Glu Asp Cys Ile Pro Glu Val Lys Ile Ala Tyr Ile  
 1410 1415 1420  
 Asn Phe Leu Asn His Cys Tyr Val Asp Thr Glu Val Glu Met Lys Glu  
 1425 1430 1435 1440  
 Ile Tyr Thr Ser Asn His Met Trp Lys Leu Phe Glu Asn Phe Leu Val  
 1445 1450 1455  
 Asp Ile Cys Arg Ala Cys Asn Asn Thr Ser Asp Arg Lys His Ala Asp  
 1460 1465 1470  
 Ser Val Leu Glu Lys Tyr Val Thr Glu Ile Val Met Ser Ile Val Thr  
 1475 1480 1485  
 Thr Phe Phe Ser Ser Pro Phe Ser Asp Gln Ser Thr Thr Leu Gln Thr  
 1490 1495 1500  
 Arg Gln Pro Val Phe Val Gln Leu Leu Gln Gly Val Phe Arg Val Tyr  
 1505 1510 1515 1520  
 His Cys Asn Trp Leu Met Pro Ser Gln Lys Ala Ser Val Glu Ser Cys  
 1525 1530 1535  
 Ile Arg Val Leu Ser Asp Val Ala Lys Ser Arg Ala Ile Ala Ile Pro  
 1540 1545 1550  
 Val Asp Leu Asp Ser Gln Val Asn Asn Leu Phe Leu Lys Ser His Asn  
 1555 1560 1565  
 Ile Val Gln Lys Thr Ala Met Asn Trp Arg Leu Ser Ala Arg Asn Ala  
 1570 1575 1580  
 Ala Arg Arg Asp Glu Val Leu Ala Ala Ser Arg Asp Tyr Arg Asn Ile  
 1585 1590 1595 1600  
 Ile Glu Arg Leu Gln Asp Ile Val Ser Ala Leu Glu Asp Arg Leu Arg  
 1605 1610 1615  
 Pro Leu Val Gln Ala Glu Leu Ser Val Leu Val Asp Val Leu His Arg  
 1620 1625 1630  
 Pro Glu Leu Leu Phe Pro Glu Asn Thr Asp Ala Arg Arg Lys Cys Glu  
 1635 1640 1645

Ser Gly Gly Phe Ile Cys Lys Leu Ile Lys His Thr Lys Gln Leu Leu  
 1650 1655 1660  
 Glu Glu Asn Glu Glu Lys Leu Cys Ile Lys Val Leu Gln Thr Leu Arg  
 1665 1670 1675 1680  
 Glu Met Met Thr Lys Asp Arg Gly Tyr Gly Glu Lys Gln Ile Ser Ile  
 1685 1690 1695  
 Asp Glu Leu Glu Asn Ala Glu Leu Pro Gln Pro Pro Glu Ala Glu Asn  
 1700 1705 1710  
 Ser Thr Glu Glu Leu Glu Pro Ser Pro Pro Leu Arg Gln Leu Glu Asp  
 1715 1720 1725  
 His Lys Arg Gly Glu Ala Leu Arg Gln Ile Leu Val Asn Arg Tyr Tyr  
 1730 1735 1740  
 Gly Asn Ile Arg Pro Ser Gly Arg Arg Glu Glu Leu Thr Ser Phe Gly  
 1745 1750 1755 1760  
 Asn Gly Pro Leu Ser Pro Gly Gly Pro Ser Lys Pro Gly Gly Gly Gly  
 1765 1770 1775  
 Gly Gly Pro Gly Ser Gly Ser Thr Ser Arg Gly Glu Met Ser Leu Ala  
 1780 1785 1790  
 Glu Val Gln Cys His Leu Asp Lys Glu Gly Ala Ser Asn Leu Val Ile  
 1795 1800 1805  
 Asp Leu Ile Met Asn Ala Ser Ser Asp Arg Val Phe His Glu Ser Ile  
 1810 1815 1820  
 Leu Leu Ala Ile Ala Leu Leu Glu Gly Gly Asn Thr Thr Ile Gln His  
 1825 1830 1835 1840  
 Ser Phe Phe Cys Arg Leu Thr Glu Asp Lys Lys Ser Glu Lys Phe Phe  
 1845 1850 1855  
 Lys Val Phe Tyr Asp Arg Met Lys Val Ala Gln Gln Glu Ile Lys Ala  
 1860 1865 1870  
 Thr Val Thr Val Asn Thr Ser Asp Leu Gly Asn Lys Lys Lys Asp Asp  
 1875 1880 1885  
 Glu Val Asp Arg Asp Ala Pro Ser Arg Lys Lys Ala Lys Glu Pro Thr  
 1890 1895 1900  
 Thr Gln Ile Thr Glu Glu Val Arg Asp Gln Leu Leu Glu Ala Ser Ala  
 1905 1910 1915 1920  
 Ala Thr Arg Lys Ala Phe Thr Thr Phe Arg Arg Glu Ala Asp Pro Asp  
 1925 1930 1935  
 Asp His Tyr Gln Ser Gly Glu Gly Thr Gln Ala Thr Thr Asp Lys Ala  
 1940 1945 1950  
 Lys Asp Asp Leu Glu Met Ser Ala Val Ile Thr Ile Met Gln Pro Ile  
 1955 1960 1965  
 Leu Arg Phe Leu Gln Leu Leu Cys Glu Asn His Asn Arg Asp Leu Gln  
 1970 1975 1980  
 Asn Phe Leu Arg Cys Gln Asn Asn Lys Thr Asn Tyr Asn Leu Val Cys  
 1985 1990 1995 2000  
 Glu Thr Leu Gln Phe Leu Asp Cys Ile Cys Gly Ser Thr Thr Gly Gly  
 2005 2010 2015  
 Leu Gly Leu Leu Gly Leu Tyr Ile Asn Glu Lys Asn Val Ala Leu Ile  
 2020 2025 2030  
 Asn Gln Thr Leu Glu Ser Leu Thr Glu Tyr Cys Gln Gly Pro Cys His  
 2035 2040 2045  
 Glu Asn Gln Asn Cys Ile Ala Thr His Glu Ser Asn Gly Ile Asp Ile  
 2050 2055 2060  
 Ile Thr Ala Leu Ile Leu Asn Asp Ile Asn Pro Leu Gly Lys Lys Arg  
 2065 2070 2075 2080  
 Met Asp Leu Val Leu Glu Leu Lys Asn Asn Ala Ser Lys Leu Leu Leu  
 2085 2090 2095  
 Ala Ile Met Glu Ser Arg His Asp Ser Glu Asn Ala Glu Arg Ile Leu  
 2100 2105 2110  
 Tyr Asn Met Arg Pro Lys Glu Leu Val Glu Val Ile Lys Lys Ala Tyr  
 2115 2120 2125

Met Gln Gly Glu Val Glu Phe Glu Asp Gly Glu Asn Gly Glu Asp Gly  
 2130 2135 2140  
 Ala Ala Ser Pro Arg Asn Val Gly His Asn Ile Tyr Ile Leu Ala His  
 2145 2150 2155 2160  
 Gln Leu Ala Arg His Asn Lys Glu Leu Gln Thr Met Leu Lys Pro Gly  
 2165 2170 2175  
 Gly Gln Val Asp Gly Asp Glu Ala Leu Glu Phe Tyr Ala Lys His Thr  
 2180 2185 2190  
 Ala Gln Ile Glu Ile Val Arg Leu Asp Arg Thr Met Glu Gln Ile Val  
 2195 2200 2205  
 Phe Pro Val Pro Ser Ile Cys Glu Phe Leu Thr Lys Glu Ser Lys Leu  
 2210 2215 2220  
 Arg Ile Tyr Tyr Thr Thr Glu Arg Asp Glu Gln Gly Ser Lys Ile Asn  
 2225 2230 2235 2240  
 Asp Phe Phe Leu Arg Ser Glu Asp Leu Phe Asn Glu Met Asn Trp Gln  
 2245 2250 2255  
 Lys Lys Leu Arg Ala Gln Pro Val Leu Tyr Trp Cys Ala Arg Asn Met  
 2260 2265 2270  
 Ser Phe Trp Ser Ser Ile Ser Phe Asn Leu Ala Val Leu Met Asn Leu  
 2275 2280 2285  
 Leu Val Ala Phe Phe Tyr Pro Phe Lys Gly Val Arg Gly Gly Thr Leu  
 2290 2295 2300  
 Glu Pro His Trp Ser Gly Leu Leu Trp Thr Ala Met Leu Ile Ser Leu  
 2305 2310 2315 2320  
 Ala Ile Val Ile Ala Leu Pro Lys Pro His Gly Ile Arg Ala Leu Ile  
 2325 2330 2335  
 Ala Ser Thr Ile Leu Arg Leu Ile Phe Ser Val Gly Leu Gln Pro Thr  
 2340 2345 2350  
 Leu Phe Leu Leu Gly Ala Phe Asn Val Cys Asn Lys Ile Ile Phe Leu  
 2355 2360 2365  
 Met Ser Phe Val Gly Asn Cys Gly Thr Phe Thr Arg Gly Tyr Arg Ala  
 2370 2375 2380  
 Met Val Leu Asp Val Glu Phe Leu Tyr His Leu Leu Tyr Leu Leu Ile  
 2385 2390 2395 2400  
 Cys Ala Met Gly Leu Phe Val His Glu Phe Phe Tyr Ser Leu Leu Leu  
 2405 2410 2415  
 Phe Asp Leu Val Tyr Arg Glu Glu Thr Leu Leu Asn Val Ile Lys Ser  
 2420 2425 2430  
 Val Thr Arg Asn Gly Arg Pro Ile Ile Leu Thr Ala Ala Leu Ala Leu  
 2435 2440 2445  
 Ile Leu Val Tyr Leu Phe Ser Ile Val Gly Tyr Leu Phe Phe Lys Asp  
 2450 2455 2460  
 Asp Phe Ile Leu Glu Val Asp Arg Leu Pro Asn Glu Thr Ala Gly Pro  
 2465 2470 2475 2480  
 Glu Thr Gly Glu Ser Leu Ala Asn Asp Phe Leu Tyr Ser Asp Val Cys  
 2485 2490 2495  
 Arg Val Glu Thr Gly Glu Asn Cys Thr Ser Pro Ala Pro Lys Glu Glu  
 2500 2505 2510  
 Leu Leu Pro Val Glu Glu Thr Glu Gln Asp Lys Glu His Thr Cys Glu  
 2515 2520 2525  
 Thr Leu Leu Met Cys Ile Val Thr Val Leu Ser His Gly Leu Arg Ser  
 2530 2535 2540  
 Gly Gly Gly Val Gly Asp Val Leu Arg Lys Pro Ser Lys Glu Glu Pro  
 2545 2550 2555 2560  
 Leu Phe Ala Ala Arg Val Ile Tyr Asp Leu Leu Phe Phe Phe Met Val  
 2565 2570 2575  
 Ile Ile Ile Val Leu Asn Leu Ile Phe Gly Val Ile Ile Asp Thr Phe  
 2580 2585 2590  
 Ala Asp Leu Arg Ser Glu Lys Gln Lys Lys Glu Glu Ile Leu Lys Thr  
 2595 2600 2605

```

Thr Cys Phe Ile Cys Gly Leu Glu Arg Asp Lys Phe Asp Asn Lys Thr
2610                2615                2620
Val Thr Phe Glu Glu His Ile Lys Glu Glu His Asn Met Trp His Tyr
2625                2630                2635                2640
Leu Cys Phe Ile Val Leu Val Lys Val Lys Asp Ser Thr Glu Tyr Thr
                2645                2650                2655
Gly Pro Glu Ser Tyr Val Ala Glu Met Ile Arg Glu Arg Asn Leu Asp
                2660                2665                2670
Trp Phe Pro Arg Met Arg Ala Met Ser Leu Val Ser Ser Asp Ser Glu
                2675                2680                2685
Gly Glu Gln Asn Glu Leu Arg Asn Leu Gln Glu Lys Leu Glu Ser Thr
2690                2695                2700
Met Lys Leu Val Thr Asn Leu Ser Gly Gln Leu Ser Glu Leu Lys Asp
2705                2710                2715                2720
Gln Met Thr Glu Gln Arg Lys Gln Lys Gln Arg Ile Gly Leu Leu Gly
                2725                2730                2735
His Pro Pro His Met Asn Val Asn Pro Gln Gln Pro Ala
                2740                2745

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```

<210> 11
<211> 2710
<212> PRT
<213> Artificial Sequence

```

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<220>
<223> Description of Artificial Sequence:/note =
        synthetic construct

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```

<400> 11
Met Ser Asp Lys Met Ser Ser Phe Leu His Ile Gly Asp Ile Cys Ser
1          5          10          15
Leu Tyr Ala Glu Gly Ser Thr Asn Gly Phe Ile Ser Thr Leu Gly Leu
20          25          30
Val Asp Asp Arg Cys Val Val Gln Pro Glu Ala Gly Asp Leu Asn Asn
35          40          45
Pro Pro Lys Lys Phe Arg Asp Cys Leu Phe Lys Leu Cys Pro Met Asn
50          55          60
Arg Tyr Ser Ala Gln Lys Gln Phe Trp Lys Ala Ala Lys Pro Gly Ala
65          70          75          80
Asn Ser Thr Thr Asp Ala Val Leu Leu Asn Lys Leu His His Ala Ala
85          90          95
Asp Leu Glu Lys Lys Gln Asn Glu Thr Glu Asn Arg Lys Leu Leu Gly
100         105         110
Thr Val Ile Gln Tyr Gly Asn Val Ile Gln Leu Leu His Leu Lys Ser
115         120         125
Asn Lys Tyr Leu Thr Val Asn Lys Arg Leu Pro Ala Leu Leu Glu Lys
130         135         140
Asn Ala Met Arg Val Thr Leu Asp Glu Ala Gly Asn Glu Gly Ser Trp
145         150         155         160
Phe Tyr Ile Gln Pro Phe Tyr Lys Leu Arg Ser Ile Gly Asp Ser Val
165         170         175
Val Ile Gly Asp Lys Val Val Leu Asn Pro Val Asn Ala Gly Gln Pro
180         185         190
Leu His Ala Ser Ser His Gln Leu Val Asp Asn Pro Gly Cys Asn Glu
195         200         205
Val Asn Ser Val Asn Cys Asn Thr Ser Trp Lys Ile Val Leu Phe Met
210         215         220
Lys Trp Ser Asp Asn Lys Asp Asp Ile Leu Lys Gly Gly Asp Val Val
225         230         235         240

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Arg Leu Phe His Ala Glu Gln Glu Lys Phe Leu Thr Cys Asp Glu His  
 245 250 255  
 Arg Lys Lys Gln His Val Phe Leu Arg Thr Thr Gly Arg Gln Ser Ala  
 260 265 270  
 Thr Ser Ala Thr Ser Ser Lys Ala Leu Trp Glu Val Glu Val Val Gln  
 275 280 285  
 His Asp Pro Cys Arg Gly Gly Ala Gly Tyr Trp Asn Ser Leu Phe Arg  
 290 295 300  
 Phe Lys His Leu Ala Thr Gly His Tyr Leu Ala Ala Glu Val Asp Pro  
 305 310 315 320  
 Asp Phe Glu Glu Glu Cys Leu Glu Phe Gln Pro Ser Val Asp Pro Asp  
 325 330 335  
 Gln Asp Ala Ser Arg Ser Arg Leu Arg Asn Ala Gln Glu Lys Met Val  
 340 345 350  
 Tyr Ser Leu Val Ser Val Pro Glu Gly Asn Asp Ile Ser Ser Ile Phe  
 355 360 365  
 Glu Leu Asp Pro Thr Thr Leu Arg Gly Gly Asp Ser Leu Val Pro Arg  
 370 375 380  
 Asn Ser Tyr Val Arg Leu Arg His Leu Cys Thr Asn Thr Trp Val His  
 385 390 395 400  
 Ser Thr Asn Ile Pro Ile Asp Lys Glu Glu Lys Pro Val Met Leu  
 405 410 415  
 Lys Ile Gly Thr Ser Pro Leu Lys Glu Asp Lys Glu Ala Phe Ala Ile  
 420 425 430  
 Val Pro Val Ser Pro Ala Glu Val Arg Asp Leu Asp Phe Ala Asn Asp  
 435 440 445  
 Ala Ser Lys Val Leu Gly Ser Ile Ala Gly Lys Leu Glu Lys Gly Thr  
 450 455 460  
 Ile Thr Gln Asn Glu Arg Arg Ser Val Thr Lys Leu Leu Glu Asp Leu  
 465 470 475 480  
 Val Tyr Phe Val Thr Gly Gly Thr Asn Ser Gly Gln Asp Val Leu Glu  
 485 490 495  
 Val Val Phe Ser Lys Pro Asn Arg Glu Arg Gln Lys Leu Met Arg Glu  
 500 505 510  
 Gln Asn Ile Leu Lys Gln Ile Phe Lys Leu Leu Gln Ala Pro Phe Thr  
 515 520 525  
 Asp Cys Gly Asp Gly Pro Met Leu Arg Leu Glu Glu Leu Gly Asp Gln  
 530 535 540  
 Arg His Ala Pro Phe Arg His Ile Cys Arg Leu Cys Tyr Arg Val Leu  
 545 550 555 560  
 Arg His Ser Gln Gln Asp Tyr Arg Lys Asn Gln Glu Tyr Ile Ala Lys  
 565 570 575  
 Gln Phe Gly Phe Met Gln Lys Gln Ile Gly Tyr Asp Val Leu Ala Glu  
 580 585 590  
 Asp Thr Ile Thr Ala Leu Leu His Asn Asn Arg Lys Leu Leu Glu Lys  
 595 600 605  
 His Ile Thr Ala Ala Glu Ile Asp Thr Phe Val Ser Leu Val Arg Lys  
 610 615 620  
 Asn Arg Glu Pro Arg Phe Leu Asp Tyr Leu Ser Asp Leu Cys Val Ser  
 625 630 635 640  
 Met Asn Lys Ser Ile Pro Val Thr Gln Glu Leu Ile Cys Lys Ala Val  
 645 650 655  
 Leu Asn Pro Thr Asn Ala Asp Ile Leu Ile Glu Thr Lys Leu Val Leu  
 660 665 670  
 Ser Arg Phe Glu Phe Glu Gly Val Ser Thr Gly Glu Asn Ala Leu Glu  
 675 680 685  
 Ala Gly Glu Asp Glu Glu Glu Val Trp Leu Phe Trp Arg Asp Ser Asn  
 690 695 700  
 Lys Glu Ile Arg Ser Lys Ser Val Arg Glu Leu Ala Gln Asp Ala Lys  
 705 710 715 720

Glu Gly Gln Lys Glu Asp Arg Asp Val Leu Ser Tyr Tyr Arg Tyr Gln  
 725 730 735  
 Leu Asn Leu Phe Ala Arg Met Cys Leu Asp Arg Gln Tyr Leu Ala Ile  
 740 745 750  
 Asn Glu Ile Ser Gly Gln Leu Asp Val Asp Leu Ile Leu Arg Cys Met  
 755 760 765  
 Ser Asp Glu Asn Leu Pro Tyr Asp Leu Arg Ala Ser Phe Cys Arg Leu  
 770 775 780  
 Met Leu His Met His Val Asp Arg Asp Pro Gln Glu Gln Val Thr Pro  
 785 790 795 800  
 Val Lys Tyr Ala Arg Leu Trp Ser Glu Ile Pro Ser Glu Ile Ala Ile  
 805 810 815  
 Asp Asp Tyr Asp Ser Ser Gly Ala Ser Lys Asp Glu Ile Lys Glu Arg  
 820 825 830  
 Phe Ala Gln Thr Met Glu Phe Val Glu Glu Tyr Leu Arg Asp Val Val  
 835 840 845  
 Cys Gln Arg Phe Pro Phe Ser Asp Lys Glu Lys Asn Lys Leu Thr Phe  
 850 855 860  
 Glu Val Val Asn Leu Ala Arg Asn Leu Ile Tyr Phe Gly Phe Tyr Asn  
 865 870 875 880  
 Phe Ser Asp Leu Leu Arg Leu Thr Lys Ile Leu Leu Ala Ile Leu Asp  
 885 890 895  
 Cys Val His Val Thr Thr Ile Phe Pro Ile Ser Lys Met Thr Lys Gly  
 900 905 910  
 Glu Glu Asn Lys Gly Ser Asn Val Met Arg Ser Ile His Gly Val Gly  
 915 920 925  
 Glu Leu Met Thr Gln Val Val Leu Arg Gly Gly Gly Phe Leu Pro Met  
 930 935 940  
 Thr Pro Met Ala Ala Ala Pro Glu Gly Asn Val Lys Gln Ala Glu Pro  
 945 950 955 960  
 Glu Lys Glu Asp Ile Met Val Met Asp Thr Lys Leu Lys Ile Ile Glu  
 965 970 975  
 Ile Leu Gln Phe Ile Leu Asn Val Arg Leu Asp Tyr Arg Ile Ser Cys  
 980 985 990  
 Leu Leu Cys Ile Phe Lys Arg Glu Phe Asp Glu Ser Asn Ser Gln Ser  
 995 1000 1005  
 Ser Glu Thr Ser Ser Gly Asn Ser Ser Gln Glu Gly Pro Ser Asn Val  
 1010 1015 1020  
 Pro Gly Ala Leu Asp Phe Glu His Ile Glu Glu Gln Ala Glu Gly Ile  
 1025 1030 1035 1040  
 Phe Gly Gly Ser Glu Glu Asn Thr Pro Leu Asp Leu Asp Asp His Gly  
 1045 1050 1055  
 Gly Arg Thr Phe Leu Arg Val Leu Leu His Leu Thr Met His Asp Tyr  
 1060 1065 1070  
 Pro Pro Leu Val Ser Gly Ala Leu Gln Leu Leu Phe Arg His Phe Ser  
 1075 1080 1085  
 Gln Arg Gln Glu Val Leu Gln Ala Phe Lys Gln Val Gln Leu Leu Val  
 1090 1095 1100  
 Thr Ser Gln Asp Val Asp Asn Tyr Lys Gln Ile Lys Gln Asp Leu Asp  
 1105 1110 1115 1120  
 Gln Leu Arg Ser Ile Val Glu Lys Ser Glu Leu Trp Val Tyr Lys Gly  
 1125 1130 1135  
 Gln Gly Pro Asp Glu Pro Met Asp Gly Ala Ser Gly Glu Asn Glu His  
 1140 1145 1150  
 Lys Lys Thr Glu Glu Gly Thr Ser Lys Pro Leu Lys His Glu Ser Thr  
 1155 1160 1165  
 Ser Ser Tyr Asn Tyr Arg Val Val Lys Glu Ile Leu Ile Arg Leu Ser  
 1170 1175 1180  
 Lys Leu Cys Val Gln Glu Ser Ala Ser Val Arg Lys Ser Arg Lys Gln  
 1185 1190 1195 1200

Gln Gln Arg Leu Leu Arg Asn Met Gly Ala His Ala Val Val Leu Glu  
 1205 1210 1215  
 Leu Leu Gln Ile Pro Tyr Glu Lys Ala Glu Asp Thr Lys Met Gln Glu  
 1220 1225 1230  
 Ile Met Arg Leu Ala His Glu Phe Leu Gln Asn Phe Cys Ala Gly Asn  
 1235 1240 1245  
 Gln Gln Asn Gln Ala Leu Leu His Lys His Ile Asn Leu Phe Leu Asn  
 1250 1255 1260  
 Pro Gly Ile Leu Glu Ala Val Thr Met Gln His Ile Phe Met Asn Asn  
 1265 1270 1275 1280  
 Phe Gln Leu Cys Ser Glu Ile Asn Glu Arg Val Val Gln His Phe Val  
 1285 1290 1295  
 His Cys Ile Glu Thr His Gly Arg Asn Val Gln Tyr Ile Lys Phe Leu  
 1300 1305 1310  
 Gln Thr Ile Val Lys Ala Glu Gly Lys Phe Ile Lys Lys Cys Gln Asp  
 1315 1320 1325  
 Met Val Met Ala Glu Leu Val Asn Ser Gly Glu Asp Val Leu Val Phe  
 1330 1335 1340  
 Tyr Asn Asp Arg Ala Ser Phe Gln Thr Leu Ile Gln Met Met Arg Ser  
 1345 1350 1355 1360  
 Glu Arg Asp Arg Met Asp Glu Asn Ser Pro Leu Phe Met Tyr His Ile  
 1365 1370 1375  
 His Leu Val Glu Leu Leu Ala Val Cys Thr Glu Gly Lys Asn Val Tyr  
 1380 1385 1390  
 Thr Glu Ile Lys Cys Asn Ser Leu Leu Pro Leu Asp Asp Ile Val Arg  
 1395 1400 1405  
 Val Val Thr His Glu Asp Cys Ile Pro Glu Val Lys Ile Ala Tyr Ile  
 1410 1415 1420  
 Asn Phe Leu Asn His Cys Tyr Val Asp Thr Glu Val Glu Met Lys Glu  
 1425 1430 1435 1440  
 Ile Tyr Thr Ser Asn His Met Trp Lys Leu Phe Glu Asn Phe Leu Val  
 1445 1450 1455  
 Asp Ile Cys Arg Ala Cys Asn Asn Thr Ser Asp Arg Lys His Ala Asp  
 1460 1465 1470  
 Ser Val Leu Glu Lys Tyr Val Thr Glu Ile Val Met Ser Ile Val Thr  
 1475 1480 1485  
 Thr Phe Phe Ser Ser Pro Phe Ser Asp Gln Ser Thr Thr Leu Gln Thr  
 1490 1495 1500  
 Arg Gln Pro Val Phe Val Gln Leu Leu Gln Gly Val Phe Arg Val Tyr  
 1505 1510 1515 1520  
 His Cys Asn Trp Leu Met Pro Ser Gln Lys Ala Ser Val Glu Ser Cys  
 1525 1530 1535  
 Ile Arg Val Leu Ser Asp Val Ala Lys Ser Arg Ala Ile Ala Ile Pro  
 1540 1545 1550  
 Val Asp Leu Asp Ser Gln Val Asn Asn Leu Phe Leu Lys Ser His Asn  
 1555 1560 1565  
 Ile Val Gln Lys Thr Ala Met Asn Trp Arg Leu Ser Ala Arg Asn Ala  
 1570 1575 1580  
 Ala Arg Arg Asp Asp Val Leu Ala Ala Ser Arg Asp Tyr Arg Asn Ile  
 1585 1590 1595 1600  
 Ile Glu Arg Leu Gln Asp Ile Val Ser Ala Leu Glu Asp Arg Leu Arg  
 1605 1610 1615  
 Pro Leu Val Gln Ala Glu Leu Ser Val Leu Val Asp Val Leu His Arg  
 1620 1625 1630  
 Pro Glu Leu Leu Phe Pro Glu Asn Thr Asp Ala Arg Arg Lys Cys Glu  
 1635 1640 1645  
 Ser Gly Gly Phe Ile Cys Lys Leu Ile Lys His Thr Lys Gln Leu Leu  
 1650 1655 1660  
 Glu Glu Asn Glu Glu Lys Leu Cys Ile Lys Val Leu Gln Thr Leu Arg  
 1665 1670 1675 1680

Glu Met Met Thr Lys Asp Arg Gly Tyr Gly Glu Lys Gly Glu Ala Leu  
 1685 1690 1695  
 Arg Gln Ile Leu Val Asn Arg Tyr Tyr Gly Asn Ile Arg Pro Ser Gly  
 1700 1705 1710  
 Arg Arg Glu Asp Leu Thr Ser Phe Gly Asn Gly Pro Leu Ser Pro Gly  
 1715 1720 1725  
 Gly Pro Ser Lys Pro Gly Gly Gly Gly Gly Gly Pro Gly Ser Gly Ser  
 1730 1735 1740  
 Thr Ser Arg Gly Glu Met Ser Leu Ala Glu Val Gln Cys His Leu Asp  
 1745 1750 1755 1760  
 Lys Glu Gly Ala Ser Asn Leu Val Ile Asp Leu Ile Met Asn Ala Ser  
 1765 1770 1775  
 Ser Asp Arg Val Phe His Glu Ser Ile Leu Leu Ala Ile Ala Leu Leu  
 1780 1785 1790  
 Glu Gly Gly Asn Thr Thr Ile Gln His Ser Phe Phe Cys Arg Leu Thr  
 1795 1800 1805  
 Glu Asp Lys Lys Ser Glu Lys Phe Phe Lys Val Phe Tyr Asp Arg Met  
 1810 1815 1820  
 Lys Val Ala Gln Gln Glu Ile Lys Ala Thr Val Thr Val Asn Thr Ser  
 1825 1830 1835 1840  
 Asp Leu Gly Asn Lys Lys Lys Asp Asp Glu Val Asp Arg Asp Ala Pro  
 1845 1850 1855  
 Ser Arg Lys Lys Ala Lys Glu Pro Thr Thr Gln Ile Thr Glu Glu Val  
 1860 1865 1870  
 Arg Asp Gln Leu Leu Glu Ala Ser Ala Ala Thr Arg Lys Ala Phe Thr  
 1875 1880 1885  
 Thr Phe Arg Arg Glu Ala Asp Pro Asp Asp His Tyr Gln Ser Gly Glu  
 1890 1895 1900  
 Gly Thr Gln Ala Thr Thr Asp Lys Ala Lys Asp Asp Leu Glu Met Ser  
 1905 1910 1915 1920  
 Ala Val Ile Thr Ile Met Gln Pro Ile Leu Arg Phe Leu Gln Leu Leu  
 1925 1930 1935  
 Cys Glu Asn His Asn Arg Asp Leu Gln Asn Phe Leu Arg Cys Gln Asn  
 1940 1945 1950  
 Asn Lys Thr Asn Tyr Asn Leu Val Cys Glu Thr Leu Gln Phe Leu Asp  
 1955 1960 1965  
 Cys Ile Cys Gly Ser Thr Thr Gly Gly Leu Gly Leu Leu Gly Leu Tyr  
 1970 1975 1980  
 Ile Asn Glu Lys Asn Val Ala Leu Ile Asn Gln Thr Leu Glu Ser Leu  
 1985 1990 1995 2000  
 Thr Glu Tyr Cys Gln Gly Pro Cys His Glu Asn Gln Asn Cys Ile Ala  
 2005 2010 2015  
 Thr His Glu Ser Asn Gly Ile Asp Ile Ile Thr Ala Leu Ile Leu Asn  
 2020 2025 2030  
 Asp Ile Asn Pro Leu Gly Lys Lys Arg Met Asp Leu Val Leu Glu Leu  
 2035 2040 2045  
 Lys Asn Asn Ala Ser Lys Leu Leu Leu Ala Ile Met Glu Ser Arg His  
 2050 2055 2060  
 Asp Ser Glu Asn Ala Glu Arg Ile Leu Tyr Asn Met Arg Pro Lys Glu  
 2065 2070 2075 2080  
 Leu Val Glu Val Ile Lys Lys Ala Tyr Met Gln Gly Glu Val Glu Phe  
 2085 2090 2095  
 Glu Asp Gly Glu Asn Gly Glu Asp Gly Ala Ala Ser Pro Arg Asn Val  
 2100 2105 2110  
 Gly His Asn Ile Tyr Ile Leu Ala His Gln Leu Ala Arg His Asn Lys  
 2115 2120 2125  
 Glu Leu Gln Thr Met Leu Lys Pro Gly Gly Gln Val Asp Gly Asp Glu  
 2130 2135 2140  
 Ala Leu Glu Phe Tyr Ala Lys His Thr Ala Gln Ile Glu Ile Val Arg  
 2145 2150 2155 2160



Leu Asp Arg Thr Met Glu Gln Ile Val Phe Pro Val Pro Ser Ile Cys  
 2165 2170 2175  
 Glu Phe Leu Thr Lys Glu Ser Lys Leu Arg Ile Tyr Tyr Thr Thr Glu  
 2180 2185 2190  
 Arg Asp Glu Gln Gly Ser Lys Ile Asn Asp Phe Phe Leu Arg Ser Glu  
 2195 2200 2205  
 Asp Leu Phe Asn Glu Met Asn Trp Gln Lys Lys Leu Arg Ala Gln Pro  
 2210 2215 2220  
 Val Leu Tyr Trp Cys Ala Arg Asn Met Ser Phe Trp Ser Ser Ile Ser  
 2225 2230 2235 2240  
 Phe Asn Leu Ala Val Leu Met Asn Leu Leu Val Ala Phe Phe Tyr Pro  
 2245 2250 2255  
 Phe Lys Gly Val Arg Gly Gly Thr Leu Glu Pro His Trp Ser Gly Leu  
 2260 2265 2270  
 Leu Trp Thr Ala Met Leu Ile Ser Leu Ala Ile Val Ile Ala Leu Pro  
 2275 2280 2285  
 Lys Pro His Gly Ile Arg Ala Leu Ile Ala Ser Thr Ile Leu Arg Leu  
 2290 2295 2300  
 Ile Phe Ser Val Gly Leu Gln Pro Thr Leu Phe Leu Leu Gly Ala Phe  
 2305 2310 2315 2320  
 Asn Val Cys Asn Lys Ile Ile Phe Leu Met Ser Phe Val Gly Asn Cys  
 2325 2330 2335  
 Gly Thr Phe Thr Arg Gly Tyr Arg Ala Met Val Leu Asp Val Glu Phe  
 2340 2345 2350  
 Leu Tyr His Leu Leu Tyr Leu Leu Ile Cys Ala Met Gly Leu Phe Val  
 2355 2360 2365  
 His Glu Phe Phe Tyr Ser Leu Leu Leu Phe Asp Leu Val Tyr Arg Glu  
 2370 2375 2380  
 Glu Thr Leu Leu Asn Val Ile Lys Ser Val Thr Arg Asn Gly Arg Pro  
 2385 2390 2395 2400  
 Ile Ile Leu Thr Ala Ala Leu Ala Leu Ile Leu Val Tyr Leu Phe Ser  
 2405 2410 2415  
 Ile Val Gly Tyr Leu Phe Phe Lys Asp Asp Phe Ile Leu Glu Val Asp  
 2420 2425 2430  
 Arg Leu Pro Asn Glu Thr Ala Gly Pro Glu Thr Gly Glu Ser Leu Ala  
 2435 2440 2445  
 Asn Asp Phe Leu Tyr Ser Asp Val Cys Arg Val Glu Thr Gly Glu Asn  
 2450 2455 2460  
 Cys Thr Ser Pro Ala Pro Lys Glu Glu Leu Leu Pro Val Glu Glu Thr  
 2465 2470 2475 2480  
 Glu Gln Asp Lys Glu His Thr Cys Glu Thr Leu Leu Met Cys Ile Val  
 2485 2490 2495  
 Thr Val Leu Ser His Gly Leu Arg Ser Gly Gly Gly Val Gly Asp Val  
 2500 2505 2510  
 Leu Arg Lys Pro Ser Lys Glu Glu Pro Leu Phe Ala Ala Arg Val Ile  
 2515 2520 2525  
 Tyr Asp Leu Leu Phe Phe Phe Met Val Ile Ile Ile Val Leu Asn Leu  
 2530 2535 2540  
 Ile Phe Gly Val Ile Ile Asp Thr Phe Ala Asp Leu Arg Ser Glu Lys  
 2545 2550 2555 2560  
 Gln Lys Lys Glu Glu Ile Leu Lys Thr Thr Cys Phe Ile Cys Gly Leu  
 2565 2570 2575  
 Glu Arg Asp Lys Phe Asp Asn Lys Thr Val Thr Phe Glu Glu His Ile  
 2580 2585 2590  
 Lys Glu Glu His Asn Met Trp His Tyr Leu Cys Phe Ile Val Leu Val  
 2595 2600 2605  
 Lys Val Lys Asp Ser Thr Glu Tyr Thr Gly Pro Glu Ser Tyr Val Ala  
 2610 2615 2620  
 Glu Met Ile Arg Glu Arg Asn Leu Asp Trp Phe Pro Arg Met Arg Ala  
 2625 2630 2635 2640

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Met Ser Leu Val Ser Ser Asp Ser Glu Gly Glu Gln Asn Glu Leu Arg
      2645                      2650                      2655
Asn Leu Gln Glu Lys Leu Glu Ser Thr Met Lys Leu Val Thr Asn Leu
      2660                      2665                      2670
Ser Gly Gln Leu Ser Glu Leu Lys Asp Gln Met Thr Glu Gln Arg Lys
      2675                      2680                      2685
Gln Lys Gln Arg Ile Gly Leu Leu Gly His Pro Pro His Met Asn Val
      2690                      2695                      2700
Asn Pro Gln Gln Pro Ala
2705                      2710

```

&lt;210&gt; 12

&lt;211&gt; 2749

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence:/note =  
synthetic construct

&lt;400&gt; 12

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Met Ser Asp Lys Met Ser Ser Phe Leu His Ile Gly Asp Ile Cys Ser
 1          5          10          15
Leu Tyr Ala Glu Gly Ser Thr Asn Gly Phe Ile Ser Thr Leu Gly Leu
      20          25          30
Val Asp Asp Arg Cys Val Val Gln Pro Glu Ala Gly Asp Leu Asn Asn
      35          40          45
Pro Pro Lys Lys Phe Arg Asp Cys Leu Phe Lys Leu Cys Pro Met Asn
      50          55          60
Arg Tyr Ser Ala Gln Lys Gln Phe Trp Lys Ala Ala Lys Pro Gly Ala
      65          70          75          80
Asn Ser Thr Thr Asp Ala Val Leu Leu Asn Lys Leu His His Ala Ala
      85          90          95
Asp Leu Glu Lys Lys Gln Asn Glu Thr Glu Asn Arg Lys Leu Leu Gly
      100         105         110
Thr Val Ile Gln Tyr Gly Asn Val Ile Gln Leu Leu His Leu Lys Ser
      115         120         125
Asn Lys Tyr Leu Thr Val Asn Lys Arg Leu Pro Ala Leu Leu Glu Lys
      130         135         140
Asn Ala Met Arg Val Thr Leu Asp Glu Ala Gly Asn Glu Gly Ser Trp
      145         150         155         160
Phe Tyr Ile Gln Pro Phe Tyr Lys Leu Arg Ser Ile Gly Asp Ser Val
      165         170         175
Val Ile Gly Asp Lys Val Val Leu Asn Pro Val Asn Ala Gly Gln Pro
      180         185         190
Leu His Ala Ser Ser His Gln Leu Val Asp Asn Pro Gly Cys Asn Glu
      195         200         205
Val Asn Ser Val Asn Cys Asn Thr Ser Trp Lys Ile Val Leu Phe Met
      210         215         220
Lys Trp Ser Asp Asn Lys Asp Asp Ile Leu Lys Gly Gly Asp Val Val
      225         230         235         240
Arg Leu Phe His Ala Glu Gln Glu Lys Phe Leu Thr Cys Asp Glu His
      245         250         255
Arg Lys Lys Gln His Val Phe Leu Arg Thr Thr Gly Arg Gln Ser Ala
      260         265         270
Thr Ser Ala Thr Ser Ser Lys Ala Leu Trp Glu Val Glu Val Val Gln
      275         280         285
His Asp Pro Cys Arg Gly Gly Ala Gly Tyr Trp Asn Ser Leu Phe Arg
      290         295         300

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Phe Lys His Leu Ala Thr Gly His Tyr Leu Ala Ala Glu Val Asp Pro  
 305 310 315 320  
 Asp Phe Glu Glu Glu Cys Leu Glu Phe Gln Pro Ser Val Asp Pro Asp  
 325 330 335  
 Gln Asp Ala Ser Arg Ser Arg Leu Arg Asn Ala Gln Glu Lys Met Val  
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 Ser Thr Asn Ile Pro Ile Asp Lys Glu Glu Glu Lys Pro Val Met Leu  
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 Lys Ile Gly Thr Ser Pro Leu Lys Glu Asp Lys Glu Ala Phe Ala Ile  
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 1940 1945 1950  
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 <213> Artificial Sequence

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 synthetic construct

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 Val Asp Asp Arg Cys Val Val Gln Pro Glu Ala Gly Asp Leu Asn Asn  
 35 40 45  
 Pro Pro Lys Lys Phe Arg Asp Cys Leu Phe Lys Leu Cys Pro Met Asn  
 50 55 60  
 Arg Tyr Ser Ala Gln Lys Gln Phe Trp Lys Ala Ala Lys Pro Gly Ala  
 65 70 75 80  
 Asn Ser Thr Thr Asp Ala Val Leu Leu Asn Lys Leu His His Ala Ala  
 85 90 95  
 Asp Leu Glu Lys Lys Gln Asn Glu Thr Glu Asn Arg Lys Leu Leu Gly  
 100 105 110  
 Thr Val Ile Gln Tyr Gly Asn Val Ile Gln Leu Leu His Leu Lys Ser  
 115 120 125  
 Asn Lys Tyr Leu Thr Val Asn Lys Arg Leu Pro Ala Leu Leu Glu Lys  
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 Asn Ala Met Arg Val Thr Leu Asp Glu Ala Gly Asn Glu Gly Ser Trp  
 145 150 155 160  
 Phe Tyr Ile Gln Pro Phe Tyr Lys Leu Arg Ser Ile Gly Asp Ser Val  
 165 170 175  
 Val Ile Gly Asp Lys Val Val Leu Asn Pro Val Asn Ala Gly Gln Pro  
 180 185 190  
 Leu His Ala Ser Ser His Gln Leu Val Asp Asn Pro Gly Cys Asn Glu  
 195 200 205  
 Val Asn Ser Val Asn Cys Asn Thr Ser Trp Lys Ile Val Leu Phe Met  
 210 215 220  
 Lys Trp Ser Asp Asn Lys Asp Asp Ile Leu Lys Gly Gly Asp Val Val  
 225 230 235 240  
 Arg Leu Phe His Ala Glu Gln Glu Lys Phe Leu Thr Cys Asp Glu His  
 245 250 255  
 Arg Lys Lys Gln His Val Phe Leu Arg Thr Thr Gly Arg Gln Ser Ala  
 260 265 270  
 Thr Ser Ala Thr Ser Ser Lys Ala Leu Trp Glu Val Glu Val Val Gln  
 275 280 285  
 His Asp Pro Cys Arg Gly Gly Ala Gly Tyr Trp Asn Ser Leu Phe Arg  
 290 295 300  
 Phe Lys His Leu Ala Thr Gly His Tyr Leu Ala Ala Glu Val Asp Pro  
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 Asp Phe Glu Glu Glu Cys Leu Glu Phe Gln Pro Ser Val Asp Pro Asp  
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Gln Asp Ala Ser Arg Ser Arg Leu Arg Asn Ala Gln Glu Lys Met Val
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Tyr Ser Leu Val Ser Val Pro Glu Gly Asn Asp Ile Ser Ser Ile Phe
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      370      375      380
Asn Ser Tyr Val Arg Leu Arg His Leu Cys Thr Asn Thr Trp Val His
      385      390      395      400
Ser Thr Asn Ile Pro Ile Asp Lys Glu Glu Glu Lys Pro Val Met Leu
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Lys Ile Gly Thr Ser Pro Leu Lys Glu Asp Lys Glu Ala Phe Ala Ile
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Val Pro Val Ser Pro Ala Glu Val Arg Asp Leu Asp Phe Ala Asn Asp
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Ile Thr Gln Asn Glu Arg Arg Ser Val Thr Lys Leu Leu Glu Asp Leu
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Val Tyr Phe Val Thr Gly Gly Thr Asn Ser Gly Gln Asp Val Leu Glu
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Val Val Phe Ser Lys Pro Asn Arg Glu Arg Gln Lys Leu Met Arg Glu
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Asp Cys Gly Asp Gly Pro Met Leu Arg Leu Glu Glu Leu Gly Asp Gln
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Asp Thr Ile Thr Ala Leu Leu His Asn Asn Arg Lys Leu Leu Glu Lys
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His Ile Thr Ala Ala Glu Ile Asp Thr Phe Val Ser Leu Val Arg Lys
      610      615      620
Asn Arg Glu Pro Arg Phe Leu Asp Tyr Leu Ser Asp Leu Cys Val Ser
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Met Asn Lys Ser Ile Pro Val Thr Gln Glu Leu Ile Cys Lys Ala Val
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Leu Asn Pro Thr Asn Ala Asp Ile Leu Ile Glu Thr Lys Leu Val Leu
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Ser Arg Phe Glu Phe Glu Gly Val Ser Thr Gly Glu Asn Ala Leu Glu
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Ala Gly Glu Asp Glu Glu Glu Val Trp Leu Phe Trp Arg Asp Ser Asn
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Lys Glu Ile Arg Ser Lys Ser Val Arg Glu Leu Ala Gln Asp Ala Lys
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Glu Gly Gln Lys Glu Asp Arg Asp Val Leu Ser Tyr Tyr Arg Tyr Gln
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Leu Asn Leu Phe Ala Arg Met Cys Leu Asp Arg Gln Tyr Leu Ala Ile
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Asn Glu Ile Ser Gly Gln Leu Asp Val Asp Leu Ile Leu Arg Cys Met
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Ser Asp Glu Asn Leu Pro Tyr Asp Leu Arg Ala Ser Phe Cys Arg Leu
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Met Leu His Met His Val Asp Arg Asp Pro Gln Glu Gln Val Thr Pro
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Val Lys Tyr Ala Arg Leu Trp Ser Glu Ile Pro Ser Glu Ile Ala Ile
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Asp Asp Tyr Asp Ser Ser Gly Ala Ser Lys Asp Glu Ile Lys Glu Arg  
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 Phe Ala Gln Thr Met Glu Phe Val Glu Glu Tyr Leu Arg Asp Val Val  
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 Cys Gln Arg Phe Pro Phe Ser Asp Lys Glu Lys Asn Lys Leu Thr Phe  
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 Glu Val Val Asn Leu Ala Arg Asn Leu Ile Tyr Phe Gly Phe Tyr Asn  
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 Phe Ser Asp Leu Leu Arg Leu Thr Lys Ile Leu Leu Ala Ile Leu Asp  
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 Ile Val Gln Lys Thr Ala Met Asn Trp Arg Leu Ser Ala Arg Asn Ala  
 1570 1575 1580  
 Ala Arg Arg Asp Asp Val Leu Ala Ala Ser Arg Asp Tyr Arg Asn Ile  
 1585 1590 1595 1600  
 Ile Glu Arg Leu Gln Asp Ile Val Ser Ala Leu Glu Asp Arg Leu Arg  
 1605 1610 1615  
 Pro Leu Val Gln Ala Glu Leu Ser Val Leu Val Asp Val Leu His Arg  
 1620 1625 1630  
 Pro Glu Leu Leu Phe Pro Glu Asn Thr Asp Ala Arg Arg Lys Cys Glu  
 1635 1640 1645  
 Ser Gly Gly Phe Ile Cys Lys Leu Ile Lys His Thr Lys Gln Leu Leu  
 1650 1655 1660  
 Glu Glu Asn Glu Glu Lys Leu Cys Ile Lys Val Leu Gln Thr Leu Arg  
 1665 1670 1675 1680  
 Glu Met Met Thr Lys Asp Arg Gly Tyr Gly Glu Lys Gly Glu Ala Leu  
 1685 1690 1695  
 Arg Gln Ile Leu Val Asn Arg Tyr Tyr Gly Asn Ile Arg Pro Ser Gly  
 1700 1705 1710  
 Arg Arg Glu Glu Leu Thr Ser Phe Gly Asn Gly Pro Leu Ser Pro Gly  
 1715 1720 1725  
 Gly Pro Ser Lys Pro Gly Gly Gly Gly Gly Pro Gly Ser Gly Ser  
 1730 1735 1740  
 Thr Ser Arg Gly Glu Met Ser Leu Ala Glu Val Gln Cys His Leu Asp  
 1745 1750 1755 1760  
 Lys Glu Gly Ala Ser Asn Leu Val Ile Asp Leu Ile Met Asn Ala Ser  
 1765 1770 1775

Ser Asp Arg Val Phe His Glu Ser Ile Leu Leu Ala Ile Ala Leu Leu  
 1780 1785 1790  
 Glu Gly Gly Asn Thr Thr Ile Gln His Ser Phe Phe Cys Arg Leu Thr  
 1795 1800 1805  
 Glu Asp Lys Lys Ser Glu Lys Phe Phe Lys Val Phe Tyr Asp Arg Met  
 1810 1815 1820  
 Lys Val Ala Gln Gln Glu Ile Lys Ala Thr Val Thr Val Asn Thr Ser  
 1825 1830 1835 1840  
 Asp Leu Gly Asn Lys Lys Lys Asp Asp Glu Val Asp Arg Asp Ala Pro  
 1845 1850 1855  
 Ser Arg Lys Lys Ala Lys Glu Pro Thr Thr Gln Ile Thr Glu Glu Val  
 1860 1865 1870  
 Arg Asp Gln Leu Leu Glu Ala Ser Ala Ala Thr Arg Lys Ala Phe Thr  
 1875 1880 1885  
 Thr Phe Arg Arg Glu Ala Asp Pro Asp Asp His Tyr Gln Ser Gly Glu  
 1890 1895 1900  
 Gly Thr Gln Ala Thr Thr Asp Lys Ala Lys Asp Asp Leu Glu Met Ser  
 1905 1910 1915 1920  
 Ala Val Ile Thr Ile Met Gln Pro Ile Leu Arg Phe Leu Gln Leu Leu  
 1925 1930 1935  
 Cys Glu Asn His Asn Arg Asp Leu Gln Asn Phe Leu Arg Cys Gln Asn  
 1940 1945 1950  
 Asn Lys Thr Asn Tyr Asn Leu Val Cys Glu Thr Leu Gln Phe Leu Asp  
 1955 1960 1965  
 Cys Ile Cys Gly Ser Thr Thr Gly Gly Leu Gly Leu Leu Gly Leu Tyr  
 1970 1975 1980  
 Ile Asn Glu Lys Asn Val Ala Leu Ile Asn Gln Thr Leu Glu Ser Leu  
 1985 1990 1995 2000  
 Thr Glu Tyr Cys Gln Gly Pro Cys His Glu Asn Gln Asn Cys Ile Ala  
 2005 2010 2015  
 Thr His Glu Ser Asn Gly Ile Asp Ile Ile Thr Ala Leu Ile Leu Asn  
 2020 2025 2030  
 Asp Ile Asn Pro Leu Gly Lys Lys Arg Met Asp Leu Val Leu Glu Leu  
 2035 2040 2045  
 Lys Asn Asn Ala Ser Lys Leu Leu Leu Ala Ile Met Glu Ser Arg His  
 2050 2055 2060  
 Asp Ser Glu Asn Ala Glu Arg Ile Leu Tyr Asn Met Arg Pro Lys Glu  
 2065 2070 2075 2080  
 Leu Val Glu Val Ile Lys Lys Ala Tyr Met Gln Gly Glu Val Glu Phe  
 2085 2090 2095  
 Glu Asp Gly Glu Asn Gly Glu Asp Gly Ala Ala Ser Pro Arg Asn Val  
 2100 2105 2110  
 Gly His Asn Ile Tyr Ile Leu Ala His Gln Leu Ala Arg His Asn Lys  
 2115 2120 2125  
 Glu Leu Gln Thr Met Leu Lys Pro Gly Gly Gln Val Asp Gly Asp Glu  
 2130 2135 2140  
 Ala Leu Glu Phe Tyr Ala Lys His Thr Ala Gln Ile Glu Ile Val Arg  
 2145 2150 2155 2160  
 Leu Asp Arg Thr Met Glu Gln Ile Val Phe Pro Val Pro Ser Ile Cys  
 2165 2170 2175  
 Glu Phe Leu Thr Lys Glu Ser Lys Leu Arg Ile Tyr Tyr Thr Thr Glu  
 2180 2185 2190  
 Arg Asp Glu Gln Gly Ser Lys Ile Asn Asp Phe Phe Leu Arg Ser Glu  
 2195 2200 2205  
 Asp Leu Phe Asn Glu Met Asn Trp Gln Lys Lys Leu Arg Ala Gln Pro  
 2210 2215 2220  
 Val Leu Tyr Trp Cys Ala Arg Asn Met Ser Phe Trp Ser Ser Ile Ser  
 2225 2230 2235 2240  
 Phe Asn Leu Ala Val Leu Met Asn Leu Leu Val Ala Phe Phe Tyr Pro  
 2245 2250 2255

Phe Lys Gly Val Arg Gly Gly Thr Leu Glu Pro His Trp Ser Gly Leu  
                   2260                                  2265                                  2270  
 Leu Trp Thr Ala Met Leu Ile Ser Leu Ala Ile Val Ile Ala Leu Pro  
                   2275                                  2280                                  2285  
 Lys Pro His Gly Ile Arg Ala Leu Ile Ala Ser Thr Ile Leu Arg Leu  
                   2290                                  2295                                  2300  
 Ile Phe Ser Val Gly Leu Gln Pro Thr Leu Phe Leu Leu Gly Ala Phe  
 2305                                  2310                                  2315                                  2320  
 Asn Val Cys Asn Lys Ile Ile Phe Leu Met Ser Phe Val Gly Asn Cys  
                                   2325                                  2330                                  2335  
 Gly Thr Phe Thr Arg Gly Tyr Arg Ala Met Val Leu Asp Val Glu Phe  
                                   2340                                  2345                                  2350  
 Leu Tyr His Leu Leu Tyr Leu Leu Ile Cys Ala Met Gly Leu Phe Val  
                                   2355                                  2360                                  2365  
 His Glu Phe Phe Tyr Ser Leu Leu Leu Phe Asp Leu Val Tyr Arg Glu  
                                   2370                                  2375                                  2380  
 Glu Thr Leu Leu Asn Val Ile Lys Ser Val Thr Arg Asn Gly Arg Pro  
 2385                                  2390                                  2395                                  2400  
 Ile Ile Leu Thr Ala Ala Leu Ala Leu Ile Leu Val Tyr Leu Phe Ser  
                                   2405                                  2410                                  2415  
 Ile Val Gly Tyr Leu Phe Phe Lys Asp Asp Phe Ile Leu Glu Val Asp  
                                   2420                                  2425                                  2430  
 Arg Leu Pro Asn Glu Thr Ala Gly Pro Glu Thr Gly Glu Ser Leu Ala  
                                   2435                                  2440                                  2445  
 Asn Asp Phe Leu Tyr Ser Asp Val Cys Arg Val Glu Thr Gly Glu Asn  
                                   2450                                  2455                                  2460  
 Cys Thr Ser Pro Ala Pro Lys Glu Glu Leu Leu Pro Val Glu Glu Thr  
 2465                                  2470                                  2475                                  2480  
 Glu Gln Asp Lys Glu His Thr Cys Glu Thr Leu Leu Met Cys Ile Val  
                                   2485                                  2490                                  2495  
 Thr Val Leu Ser His Gly Leu Arg Ser Gly Gly Gly Val Gly Asp Val  
                                   2500                                  2505                                  2510  
 Leu Arg Lys Pro Ser Lys Glu Glu Pro Leu Phe Ala Ala Arg Val Ile  
                                   2515                                  2520                                  2525  
 Tyr Asp Leu Leu Phe Phe Phe Met Val Ile Ile Ile Val Leu Asn Leu  
                                   2530                                  2535                                  2540  
 Ile Phe Gly Val Ile Ile Asp Thr Phe Ala Asp Leu Arg Ser Glu Lys  
 2545                                  2550                                  2555                                  2560  
 Gln Lys Lys Glu Glu Ile Leu Lys Thr Thr Cys Phe Ile Cys Gly Leu  
                                   2565                                  2570                                  2575  
 Glu Arg Asp Lys Phe Asp Asn Lys Thr Val Thr Phe Glu Glu His Ile  
                                   2580                                  2585                                  2590  
 Lys Glu Glu His Asn Met Trp His Tyr Leu Cys Phe Ile Val Leu Val  
                                   2595                                  2600                                  2605  
 Lys Val Lys Asp Ser Thr Glu Tyr Thr Gly Pro Glu Ser Tyr Val Ala  
                                   2610                                  2615                                  2620  
 Glu Met Ile Arg Glu Arg Asn Leu Asp Trp Phe Pro Arg Met Arg Ala  
 2625                                  2630                                  2635                                  2640  
 Met Ser Leu Val Ser Ser Asp Ser Glu Gly Glu Gln Asn Glu Leu Arg  
                                   2645                                  2650                                  2655  
 Asn Leu Gln Glu Lys Leu Glu Ser Thr Met Lys Leu Val Thr Asn Leu  
                                   2660                                  2665                                  2670  
 Ser Gly Gln Leu Ser Glu Leu Lys Asp Gln Met Thr Glu Gln Arg Lys  
                                   2675                                  2680                                  2685  
 Gln Lys Gln Arg Ile Gly Leu Leu Gly His Pro Pro His Met Asn Val  
                                   2690                                  2695                                  2700  
 Asn Pro Gln Gln Pro Ala  
 2705                                  2710

&lt;210&gt; 14

<211> 2749  
 <212> PRT  
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =  
 synthetic construct

<400> 14

Met	Ser	Asp	Lys	Met	Ser	Ser	Phe	Leu	His	Ile	Gly	Asp	Ile	Cys	Ser	1	5	10	15
Leu	Tyr	Ala	Glu	Gly	Ser	Thr	Asn	Gly	Phe	Ile	Ser	Thr	Leu	Gly	Leu	20	25	30	
Val	Asp	Asp	Arg	Cys	Val	Val	Gln	Pro	Glu	Ala	Gly	Asp	Leu	Asn	Asn	35	40	45	
Pro	Pro	Lys	Lys	Phe	Arg	Asp	Cys	Leu	Phe	Lys	Leu	Cys	Pro	Met	Asn	50	55	60	
Arg	Tyr	Ser	Ala	Gln	Lys	Gln	Phe	Trp	Lys	Ala	Ala	Lys	Pro	Gly	Ala	65	70	75	80
Asn	Ser	Thr	Thr	Asp	Ala	Val	Leu	Leu	Asn	Lys	Leu	His	His	Ala	Ala	85	90	95	
Asp	Leu	Glu	Lys	Lys	Gln	Asn	Glu	Thr	Glu	Asn	Arg	Lys	Leu	Leu	Gly	100	105	110	
Thr	Val	Ile	Gln	Tyr	Gly	Asn	Val	Ile	Gln	Leu	Leu	His	Leu	Lys	Ser	115	120	125	
Asn	Lys	Tyr	Leu	Thr	Val	Asn	Lys	Arg	Leu	Pro	Ala	Leu	Leu	Glu	Lys	130	135	140	
Asn	Ala	Met	Arg	Val	Thr	Leu	Asp	Glu	Ala	Gly	Asn	Glu	Gly	Ser	Trp	145	150	155	160
Phe	Tyr	Ile	Gln	Pro	Phe	Tyr	Lys	Leu	Arg	Ser	Ile	Gly	Asp	Ser	Val	165	170	175	
Val	Ile	Gly	Asp	Lys	Val	Val	Leu	Asn	Pro	Val	Asn	Ala	Gly	Gln	Pro	180	185	190	
Leu	His	Ala	Ser	Ser	His	Gln	Leu	Val	Asp	Asn	Pro	Gly	Cys	Asn	Glu	195	200	205	
Val	Asn	Ser	Val	Asn	Cys	Asn	Thr	Ser	Trp	Lys	Ile	Val	Leu	Phe	Met	210	215	220	
Lys	Trp	Ser	Asp	Asn	Lys	Asp	Asp	Ile	Leu	Lys	Gly	Gly	Asp	Val	Val	225	230	235	240
Arg	Leu	Phe	His	Ala	Glu	Gln	Glu	Lys	Phe	Leu	Thr	Cys	Asp	Glu	His	245	250	255	
Arg	Lys	Lys	Gln	His	Val	Phe	Leu	Arg	Thr	Thr	Gly	Arg	Gln	Ser	Ala	260	265	270	
Thr	Ser	Ala	Thr	Ser	Ser	Lys	Ala	Leu	Trp	Glu	Val	Glu	Val	Val	Gln	275	280	285	
His	Asp	Pro	Cys	Arg	Gly	Gly	Ala	Gly	Tyr	Trp	Asn	Ser	Leu	Phe	Arg	290	295	300	
Phe	Lys	His	Leu	Ala	Thr	Gly	His	Tyr	Leu	Ala	Ala	Glu	Val	Asp	Pro	305	310	315	320
Asp	Phe	Glu	Glu	Glu	Cys	Leu	Glu	Phe	Gln	Pro	Ser	Val	Asp	Pro	Asp	325	330	335	
Gln	Asp	Ala	Ser	Arg	Ser	Arg	Leu	Arg	Asn	Ala	Gln	Glu	Lys	Met	Val	340	345	350	
Tyr	Ser	Leu	Val	Ser	Val	Pro	Glu	Gly	Asn	Asp	Ile	Ser	Ser	Ile	Phe	355	360	365	
Glu	Leu	Asp	Pro	Thr	Thr	Leu	Arg	Gly	Gly	Asp	Ser	Leu	Val	Pro	Arg	370	375	380	
Asn	Ser	Tyr	Val	Arg	Leu	Arg	His	Leu	Cys	Thr	Asn	Thr	Trp	Val	His	385	390	395	400
Ser	Thr	Asn	Ile	Pro	Ile	Asp	Lys	Glu	Glu	Glu	Lys	Pro	Val	Met	Leu	405	410	415	

Lys	Ile	Gly	Thr	Ser	Pro	Leu	Lys	Glu	Asp	Lys	Glu	Ala	Phe	Ala	Ile	
			420					425					430			
Val	Pro	Val	Ser	Pro	Ala	Glu	Val	Arg	Asp	Leu	Asp	Phe	Ala	Asn	Asp	
		435					440					445				
Ala	Ser	Lys	Val	Leu	Gly	Ser	Ile	Ala	Gly	Lys	Leu	Glu	Lys	Gly	Thr	
	450				455						460					
Ile	Thr	Gln	Asn	Glu	Arg	Arg	Ser	Val	Thr	Lys	Leu	Leu	Glu	Asp	Leu	
465				470					475						480	
Val	Tyr	Phe	Val	Thr	Gly	Gly	Thr	Asn	Ser	Gly	Gln	Asp	Val	Leu	Glu	
			485					490						495		
Val	Val	Phe	Ser	Lys	Pro	Asn	Arg	Glu	Arg	Gln	Lys	Leu	Met	Arg	Glu	
			500					505					510			
Gln	Asn	Ile	Leu	Lys	Gln	Ile	Phe	Lys	Leu	Leu	Gln	Ala	Pro	Phe	Thr	
	515						520					525				
Asp	Cys	Gly	Asp	Gly	Pro	Met	Leu	Arg	Leu	Glu	Glu	Leu	Gly	Asp	Gln	
	530				535						540					
Arg	His	Ala	Pro	Phe	Arg	His	Ile	Cys	Arg	Leu	Cys	Tyr	Arg	Val	Leu	
545					550				555						560	
Arg	His	Ser	Gln	Gln	Asp	Tyr	Arg	Lys	Asn	Gln	Glu	Tyr	Ile	Ala	Lys	
			565					570						575		
Gln	Phe	Gly	Phe	Met	Gln	Lys	Gln	Ile	Gly	Tyr	Asp	Val	Leu	Ala	Glu	
		580					585					590				
Asp	Thr	Ile	Thr	Ala	Leu	Leu	His	Asn	Asn	Arg	Lys	Leu	Leu	Glu	Lys	
	595						600					605				
His	Ile	Thr	Ala	Ala	Glu	Ile	Asp	Thr	Phe	Val	Ser	Leu	Val	Arg	Lys	
	610				615						620					
Asn	Arg	Glu	Pro	Arg	Phe	Leu	Asp	Tyr	Leu	Ser	Asp	Leu	Cys	Val	Ser	
625					630				635						640	
Met	Asn	Lys	Ser	Ile	Pro	Val	Thr	Gln	Glu	Leu	Ile	Cys	Lys	Ala	Val	
			645					650						655		
Leu	Asn	Pro	Thr	Asn	Ala	Asp	Ile	Leu	Ile	Glu	Thr	Lys	Leu	Val	Leu	
		660						665					670			
Ser	Arg	Phe	Glu	Phe	Glu	Gly	Val	Ser	Thr	Gly	Glu	Asn	Ala	Leu	Glu	
	675					680						685				
Ala	Gly	Glu	Asp	Glu	Glu	Glu	Val	Trp	Leu	Phe	Trp	Arg	Asp	Ser	Asn	
	690				695						700					
Lys	Glu	Ile	Arg	Ser	Lys	Ser	Val	Arg	Glu	Leu	Ala	Gln	Asp	Ala	Lys	
705					710					715					720	
Glu	Gly	Gln	Lys	Glu	Asp	Arg	Asp	Val	Leu	Ser	Tyr	Tyr	Arg	Tyr	Gln	
			725					730						735		
Leu	Asn	Leu	Phe	Ala	Arg	Met	Cys	Leu	Asp	Arg	Gln	Tyr	Leu	Ala	Ile	
		740						745					750			
Asn	Glu	Ile	Ser	Gly	Gln	Leu	Asp	Val	Asp	Leu	Ile	Leu	Arg	Cys	Met	
	755						760					765				
Ser	Asp	Glu	Asn	Leu	Pro	Tyr	Asp	Leu	Arg	Ala	Ser	Phe	Cys	Arg	Leu	
	770					775						780				
Met	Leu	His	Met	His	Val	Asp	Arg	Asp	Pro	Gln	Glu	Gln	Val	Thr	Pro	
785					790					795					800	
Val	Lys	Tyr	Ala	Arg	Leu	Trp	Ser	Glu	Ile	Pro	Ser	Glu	Ile	Ala	Ile	
			805						810					815		
Asp	Asp	Tyr	Asp	Ser	Ser	Gly	Ala	Ser	Lys	Asp	Glu	Ile	Lys	Glu	Arg	
		820					825						830			
Phe	Ala	Gln	Thr	Met	Glu	Phe	Val	Glu	Glu	Tyr	Leu	Arg	Asp	Val	Val	
	835						840					845				
Cys	Gln	Arg	Phe	Pro	Phe	Ser	Asp	Lys	Glu	Lys	Asn	Lys	Leu	Thr	Phe	
	850					855					860					
Glu	Val	Val	Asn	Leu	Ala	Arg	Asn	Leu	Ile	Tyr	Phe	Gly	Phe	Tyr	Asn	
865					870					875					880	
Phe	Ser	Asp	Leu	Leu	Arg	Leu	Thr	Lys	Ile	Leu	Leu	Ala	Ile	Leu	Asp	
			885						890					895		

Cys	Val	His	Val	Thr	Thr	Ile	Phe	Pro	Ile	Ser	Lys	Met	Thr	Lys	Gly	900	905	910
Glu	Glu	Asn	Lys	Gly	Ser	Asn	Val	Met	Arg	Ser	Ile	His	Gly	Val	Gly	915	920	925
Glu	Leu	Met	Thr	Gln	Val	Val	Leu	Arg	Gly	Gly	Gly	Phe	Leu	Pro	Met	930	935	940
Thr	Pro	Met	Ala	Ala	Ala	Pro	Glu	Gly	Asn	Val	Lys	Gln	Ala	Glu	Pro	945	950	955
Glu	Lys	Glu	Asp	Ile	Met	Val	Met	Asp	Thr	Lys	Leu	Lys	Ile	Ile	Glu	965	970	975
Ile	Leu	Gln	Phe	Ile	Leu	Asn	Val	Arg	Leu	Asp	Tyr	Arg	Ile	Ser	Cys	980	985	990
Leu	Leu	Cys	Ile	Phe	Lys	Arg	Glu	Phe	Asp	Glu	Ser	Asn	Ser	Gln	Ser	995	1000	1005
Ser	Glu	Thr	Ser	Ser	Gly	Asn	Ser	Ser	Gln	Glu	Gly	Pro	Ser	Asn	Val	1010	1015	1020
Pro	Gly	Ala	Leu	Asp	Phe	Glu	His	Ile	Glu	Glu	Gln	Ala	Glu	Gly	Ile	1025	1030	1035
Phe	Gly	Gly	Ser	Glu	Glu	Asn	Thr	Pro	Leu	Asp	Leu	Asp	Asp	His	Gly	1045	1050	1055
Gly	Arg	Thr	Phe	Leu	Arg	Val	Leu	Leu	His	Leu	Thr	Met	His	Asp	Tyr	1060	1065	1070
Pro	Pro	Leu	Val	Ser	Gly	Ala	Leu	Gln	Leu	Leu	Phe	Arg	His	Phe	Ser	1075	1080	1085
Gln	Arg	Gln	Glu	Val	Leu	Gln	Ala	Phe	Lys	Gln	Val	Gln	Leu	Leu	Val	1090	1095	1100
Thr	Ser	Gln	Asp	Val	Asp	Asn	Tyr	Lys	Gln	Ile	Lys	Gln	Asp	Leu	Asp	1105	1110	1115
Gln	Leu	Arg	Ser	Ile	Val	Glu	Lys	Ser	Glu	Leu	Trp	Val	Tyr	Lys	Gly	1125	1130	1135
Gln	Gly	Pro	Asp	Glu	Pro	Met	Asp	Gly	Ala	Ser	Gly	Glu	Asn	Glu	His	1140	1145	1150
Lys	Lys	Thr	Glu	Glu	Gly	Thr	Ser	Lys	Pro	Leu	Lys	His	Glu	Ser	Thr	1155	1160	1165
Ser	Ser	Tyr	Asn	Tyr	Arg	Val	Val	Lys	Glu	Ile	Leu	Ile	Arg	Leu	Ser	1170	1175	1180
Lys	Leu	Cys	Val	Gln	Glu	Ser	Ala	Ser	Val	Arg	Lys	Ser	Arg	Lys	Gln	1185	1190	1195
Gln	Gln	Arg	Leu	Leu	Arg	Asn	Met	Gly	Ala	His	Ala	Val	Val	Leu	Glu	1205	1210	1215
Leu	Leu	Gln	Ile	Pro	Tyr	Glu	Lys	Ala	Glu	Asp	Thr	Lys	Met	Gln	Glu	1220	1225	1230
Ile	Met	Arg	Leu	Ala	His	Glu	Phe	Leu	Gln	Asn	Phe	Cys	Ala	Gly	Asn	1235	1240	1245
Gln	Gln	Asn	Gln	Ala	Leu	Leu	His	Lys	His	Ile	Asn	Leu	Phe	Leu	Asn	1250	1255	1260
Pro	Gly	Ile	Leu	Glu	Ala	Val	Thr	Met	Gln	His	Ile	Phe	Met	Asn	Asn	1265	1270	1275
Phe	Gln	Leu	Cys	Ser	Glu	Ile	Asn	Glu	Arg	Val	Val	Gln	His	Phe	Val	1285	1290	1295
His	Cys	Ile	Glu	Thr	His	Gly	Arg	Asn	Val	Gln	Tyr	Ile	Lys	Phe	Leu	1300	1305	1310
Gln	Thr	Ile	Val	Lys	Ala	Glu	Gly	Lys	Phe	Ile	Lys	Lys	Cys	Gln	Asp	1315	1320	1325
Met	Val	Met	Ala	Glu	Leu	Val	Asn	Ser	Gly	Glu	Asp	Val	Leu	Val	Phe	1330	1335	1340
Tyr	Asn	Asp	Arg	Ala	Ser	Phe	Gln	Thr	Leu	Ile	Gln	Met	Met	Arg	Ser	1345	1350	1355
Glu	Arg	Asp	Arg	Met	Asp	Glu	Asn	Ser	Pro	Leu	Phe	Met	Tyr	His	Ile	1365	1370	1375



His Leu Val Glu Leu Leu Ala Val Cys Thr Glu Gly Lys Asn Val Tyr  
 1380 1385 1390  
 Thr Glu Ile Lys Cys Asn Ser Leu Leu Pro Leu Asp Asp Ile Val Arg  
 1395 1400 1405  
 Val Val Thr His Glu Asp Cys Ile Pro Glu Val Lys Ile Ala Tyr Ile  
 1410 1415 1420  
 Asn Phe Leu Asn His Cys Tyr Val Asp Thr Glu Val Glu Met Lys Glu  
 1425 1430 1435 1440  
 Ile Tyr Thr Ser Asn His Met Trp Lys Leu Phe Glu Asn Phe Leu Val  
 1445 1450 1455  
 Asp Ile Cys Arg Ala Cys Asn Asn Thr Ser Asp Arg Lys His Ala Asp  
 1460 1465 1470  
 Ser Val Leu Glu Lys Tyr Val Thr Glu Ile Val Met Ser Ile Val Thr  
 1475 1480 1485  
 Thr Phe Phe Ser Ser Pro Phe Ser Asp Gln Ser Thr Thr Leu Gln Thr  
 1490 1495 1500  
 Arg Gln Pro Val Phe Val Gln Leu Leu Gln Gly Val Phe Arg Val Tyr  
 1505 1510 1515 1520  
 His Cys Asn Trp Leu Met Pro Ser Gln Lys Ala Ser Val Glu Ser Cys  
 1525 1530 1535  
 Ile Arg Val Leu Ser Asp Val Ala Lys Ser Arg Ala Ile Ala Ile Pro  
 1540 1545 1550  
 Val Asp Leu Asp Ser Gln Val Asn Asn Leu Phe Leu Lys Ser His Asn  
 1555 1560 1565  
 Ile Val Gln Lys Thr Ala Met Asn Trp Arg Leu Ser Ala Arg Asn Ala  
 1570 1575 1580  
 Ala Arg Arg Asp Asp Val Leu Ala Ala Ser Arg Asp Tyr Arg Asn Ile  
 1585 1590 1595 1600  
 Ile Glu Arg Leu Gln Asp Ile Val Ser Ala Leu Glu Asp Arg Leu Arg  
 1605 1610 1615  
 Pro Leu Val Gln Ala Glu Leu Ser Val Leu Val Asp Val Leu His Arg  
 1620 1625 1630  
 Pro Glu Leu Leu Phe Pro Glu Asn Thr Asp Ala Arg Arg Lys Cys Glu  
 1635 1640 1645  
 Ser Gly Gly Phe Ile Cys Lys Leu Ile Lys His Thr Lys Gln Leu Leu  
 1650 1655 1660  
 Glu Glu Asn Glu Glu Lys Leu Cys Ile Lys Val Leu Gln Thr Leu Arg  
 1665 1670 1675 1680  
 Glu Met Met Thr Lys Asp Arg Gly Tyr Gly Glu Lys Gln Ile Ser Ile  
 1685 1690 1695  
 Asp Glu Leu Glu Asn Ala Glu Leu Pro Gln Pro Pro Glu Ala Glu Asn  
 1700 1705 1710  
 Ser Thr Glu Glu Leu Glu Pro Ser Pro Pro Leu Arg Gln Leu Glu Asp  
 1715 1720 1725  
 His Lys Arg Gly Glu Ala Leu Arg Gln Ile Leu Val Asn Arg Tyr Tyr  
 1730 1735 1740  
 Gly Asn Ile Arg Pro Ser Gly Arg Arg Glu Glu Leu Thr Ser Phe Gly  
 1745 1750 1755 1760  
 Asn Gly Pro Leu Ser Pro Gly Gly Pro Ser Lys Pro Gly Gly Gly Gly  
 1765 1770 1775  
 Gly Gly Pro Gly Ser Gly Ser Thr Ser Arg Gly Glu Met Ser Leu Ala  
 1780 1785 1790  
 Glu Val Gln Cys His Leu Asp Lys Glu Gly Ala Ser Asn Leu Val Ile  
 1795 1800 1805  
 Asp Leu Ile Met Asn Ala Ser Ser Asp Arg Val Phe His Glu Ser Ile  
 1810 1815 1820  
 Leu Leu Ala Ile Ala Leu Leu Glu Gly Gly Asn Thr Thr Ile Gln His  
 1825 1830 1835 1840  
 Ser Phe Phe Cys Arg Leu Thr Glu Asp Lys Lys Ser Glu Lys Phe Phe  
 1845 1850 1855

Lys Val Phe Tyr Asp Arg Met Lys Val Ala Gln Gln Glu Ile Lys Ala  
 1860 1865 1870  
 Thr Val Thr Val Asn Thr Ser Asp Leu Gly Asn Lys Lys Lys Asp Asp  
 1875 1880 1885  
 Glu Val Asp Arg Asp Ala Pro Ser Arg Lys Lys Ala Lys Glu Pro Thr  
 1890 1895 1900  
 Thr Gln Ile Thr Glu Glu Val Arg Asp Gln Leu Leu Glu Ala Ser Ala  
 1905 1910 1915 1920  
 Ala Thr Arg Lys Ala Phe Thr Thr Phe Arg Arg Glu Ala Asp Pro Asp  
 1925 1930 1935  
 Asp His Tyr Gln Ser Gly Glu Gly Thr Gln Ala Thr Thr Asp Lys Ala  
 1940 1945 1950  
 Lys Asp Asp Leu Glu Met Ser Ala Val Ile Thr Ile Met Gln Pro Ile  
 1955 1960 1965  
 Leu Arg Phe Leu Gln Leu Leu Cys Glu Asn His Asn Arg Asp Leu Gln  
 1970 1975 1980  
 Asn Phe Leu Arg Cys Gln Asn Asn Lys Thr Asn Tyr Asn Leu Val Cys  
 1985 1990 1995 2000  
 Glu Thr Leu Gln Phe Leu Asp Cys Ile Cys Gly Ser Thr Thr Gly Gly  
 2005 2010 2015  
 Leu Gly Leu Leu Gly Leu Tyr Ile Asn Glu Lys Asn Val Ala Leu Ile  
 2020 2025 2030  
 Asn Gln Thr Leu Glu Ser Leu Thr Glu Tyr Cys Gln Gly Pro Cys His  
 2035 2040 2045  
 Glu Asn Gln Asn Cys Ile Ala Thr His Glu Ser Asn Gly Ile Asp Ile  
 2050 2055 2060  
 Ile Thr Ala Leu Ile Leu Asn Asp Ile Asn Pro Leu Gly Lys Lys Arg  
 2065 2070 2075 2080  
 Met Asp Leu Val Leu Glu Leu Lys Asn Asn Ala Ser Lys Leu Leu Leu  
 2085 2090 2095  
 Ala Ile Met Glu Ser Arg His Asp Ser Glu Asn Ala Glu Arg Ile Leu  
 2100 2105 2110  
 Tyr Asn Met Arg Pro Lys Glu Leu Val Glu Val Ile Lys Lys Ala Tyr  
 2115 2120 2125  
 Met Gln Gly Glu Val Glu Phe Glu Asp Gly Glu Asn Gly Glu Asp Gly  
 2130 2135 2140  
 Ala Ala Ser Pro Arg Asn Val Gly His Asn Ile Tyr Ile Leu Ala His  
 2145 2150 2155 2160  
 Gln Leu Ala Arg His Asn Lys Glu Leu Gln Thr Met Leu Lys Pro Gly  
 2165 2170 2175  
 Gly Gln Val Asp Gly Asp Glu Ala Leu Glu Phe Tyr Ala Lys His Thr  
 2180 2185 2190  
 Ala Gln Ile Glu Ile Val Arg Leu Asp Arg Thr Met Glu Gln Ile Val  
 2195 2200 2205  
 Phe Pro Val Pro Ser Ile Cys Glu Phe Leu Thr Lys Glu Ser Lys Leu  
 2210 2215 2220  
 Arg Ile Tyr Tyr Thr Thr Glu Arg Asp Glu Gln Gly Ser Lys Ile Asn  
 2225 2230 2235 2240  
 Asp Phe Phe Leu Arg Ser Glu Asp Leu Phe Asn Glu Met Asn Trp Gln  
 2245 2250 2255  
 Lys Lys Leu Arg Ala Gln Pro Val Leu Tyr Trp Cys Ala Arg Asn Met  
 2260 2265 2270  
 Ser Phe Trp Ser Ser Ile Ser Phe Asn Leu Ala Val Leu Met Asn Leu  
 2275 2280 2285  
 Leu Val Ala Phe Phe Tyr Pro Phe Lys Gly Val Arg Gly Gly Thr Leu  
 2290 2295 2300  
 Glu Pro His Trp Ser Gly Leu Leu Trp Thr Ala Met Leu Ile Ser Leu  
 2305 2310 2315 2320  
 Ala Ile Val Ile Ala Leu Pro Lys Pro His Gly Ile Arg Ala Leu Ile  
 2325 2330 2335

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Ala Ser Thr Ile Leu Arg Leu Ile Phe Ser Val Gly Leu Gln Pro Thr
      2340                      2345                      2350
Leu Phe Leu Leu Gly Ala Phe Asn Val Cys Asn Lys Ile Ile Phe Leu
      2355                      2360                      2365
Met Ser Phe Val Gly Asn Cys Gly Thr Phe Thr Arg Gly Tyr Arg Ala
      2370                      2375                      2380
Met Val Leu Asp Val Glu Phe Leu Tyr His Leu Leu Tyr Leu Leu Ile
2385                      2390                      2395                      2400
Cys Ala Met Gly Leu Phe Val His Glu Phe Phe Tyr Ser Leu Leu Leu
      2405                      2410                      2415
Phe Asp Leu Val Tyr Arg Glu Glu Thr Leu Leu Asn Val Ile Lys Ser
      2420                      2425                      2430
Val Thr Arg Asn Gly Arg Pro Ile Ile Leu Thr Ala Ala Leu Ala Leu
      2435                      2440                      2445
Ile Leu Val Tyr Leu Phe Ser Ile Val Gly Tyr Leu Phe Phe Lys Asp
      2450                      2455                      2460
Asp Phe Ile Leu Glu Val Asp Arg Leu Pro Asn Glu Thr Ala Gly Pro
2465                      2470                      2475                      2480
Glu Thr Gly Glu Ser Leu Ala Asn Asp Phe Leu Tyr Ser Asp Val Cys
      2485                      2490                      2495
Arg Val Glu Thr Gly Glu Asn Cys Thr Ser Pro Ala Pro Lys Glu Glu
      2500                      2505                      2510
Leu Leu Pro Val Glu Glu Thr Glu Gln Asp Lys Glu His Thr Cys Glu
      2515                      2520                      2525
Thr Leu Leu Met Cys Ile Val Thr Val Leu Ser His Gly Leu Arg Ser
      2530                      2535                      2540
Gly Gly Gly Val Gly Asp Val Leu Arg Lys Pro Ser Lys Glu Glu Pro
2545                      2550                      2555                      2560
Leu Phe Ala Ala Arg Val Ile Tyr Asp Leu Leu Phe Phe Phe Met Val
      2565                      2570                      2575
Ile Ile Ile Val Leu Asn Leu Ile Phe Gly Val Ile Ile Asp Thr Phe
      2580                      2585                      2590
Ala Asp Leu Arg Ser Glu Lys Gln Lys Lys Glu Glu Ile Leu Lys Thr
      2595                      2600                      2605
Thr Cys Phe Ile Cys Gly Leu Glu Arg Asp Lys Phe Asp Asn Lys Thr
      2610                      2615                      2620
Val Thr Phe Glu Glu His Ile Lys Glu Glu His Asn Met Trp His Tyr
2625                      2630                      2635                      2640
Leu Cys Phe Ile Val Leu Val Lys Val Lys Asp Ser Thr Glu Tyr Thr
      2645                      2650                      2655
Gly Pro Glu Ser Tyr Val Ala Glu Met Ile Arg Glu Arg Asn Leu Asp
      2660                      2665                      2670
Trp Phe Pro Arg Met Arg Ala Met Ser Leu Val Ser Ser Asp Ser Glu
      2675                      2680                      2685
Gly Glu Gln Asn Glu Leu Arg Asn Leu Gln Glu Lys Leu Glu Ser Thr
      2690                      2695                      2700
Met Lys Leu Val Thr Asn Leu Ser Gly Gln Leu Ser Glu Leu Lys Asp
2705                      2710                      2715                      2720
Gln Met Thr Glu Gln Arg Lys Gln Lys Gln Arg Ile Gly Leu Leu Gly
      2725                      2730                      2735
His Pro Pro His Met Asn Val Asn Pro Gln Gln Pro Ala
      2740                      2745

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&lt;210&gt; 15

&lt;211&gt; 2710

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:/note =

## synthetic construct

&lt;400&gt; 15

Met	Ser	Asp	Lys	Met	Ser	Ser	Phe	Leu	His	Ile	Gly	Asp	Ile	Cys	Ser
1				5					10					15	
Leu	Tyr	Ala	Glu	Gly	Ser	Thr	Asn	Gly	Phe	Ile	Ser	Thr	Leu	Gly	Leu
			20					25					30		
Val	Asp	Asp	Arg	Cys	Val	Val	Gln	Pro	Glu	Ala	Gly	Asp	Leu	Asn	Asn
		35					40					45			
Pro	Pro	Lys	Lys	Phe	Arg	Asp	Cys	Leu	Phe	Lys	Leu	Cys	Pro	Met	Asn
		50				55					60				
Arg	Tyr	Ser	Ala	Gln	Lys	Gln	Phe	Trp	Lys	Ala	Ala	Lys	Pro	Gly	Ala
65					70				75					80	
Asn	Ser	Thr	Thr	Asp	Ala	Val	Leu	Leu	Asn	Lys	Leu	His	His	Ala	Ala
			85					90						95	
Asp	Leu	Glu	Lys	Lys	Gln	Asn	Glu	Thr	Glu	Asn	Arg	Lys	Leu	Leu	Gly
			100				105						110		
Thr	Val	Ile	Gln	Tyr	Gly	Asn	Val	Ile	Gln	Leu	Leu	His	Leu	Lys	Ser
		115				120							125		
Asn	Lys	Tyr	Leu	Thr	Val	Asn	Lys	Arg	Leu	Pro	Ala	Leu	Leu	Glu	Lys
		130				135					140				
Asn	Ala	Met	Arg	Val	Thr	Leu	Asp	Glu	Ala	Gly	Asn	Glu	Gly	Ser	Trp
145					150				155					160	
Phe	Tyr	Ile	Gln	Pro	Phe	Tyr	Lys	Leu	Arg	Ser	Ile	Gly	Asp	Ser	Val
			165					170						175	
Val	Ile	Gly	Asp	Lys	Val	Val	Leu	Asn	Pro	Val	Asn	Ala	Gly	Gln	Pro
			180				185						190		
Leu	His	Ala	Ser	Ser	His	Gln	Leu	Val	Asp	Asn	Pro	Gly	Cys	Asn	Glu
		195				200						205			
Val	Asn	Ser	Val	Asn	Cys	Asn	Thr	Ser	Trp	Lys	Ile	Val	Leu	Phe	Met
	210				215						220				
Lys	Trp	Ser	Asp	Asn	Lys	Asp	Asp	Ile	Leu	Lys	Gly	Gly	Asp	Val	Val
225				230					235					240	
Arg	Leu	Phe	His	Ala	Glu	Gln	Glu	Lys	Phe	Leu	Thr	Cys	Asp	Glu	His
			245					250						255	
Arg	Lys	Lys	Gln	His	Val	Phe	Leu	Arg	Thr	Thr	Gly	Arg	Gln	Ser	Ala
			260				265						270		
Thr	Ser	Ala	Thr	Ser	Ser	Lys	Ala	Leu	Trp	Glu	Val	Glu	Val	Val	Gln
		275				280						285			
His	Asp	Pro	Cys	Arg	Gly	Gly	Ala	Gly	Tyr	Trp	Asn	Ser	Leu	Phe	Arg
	290				295						300				
Phe	Lys	His	Leu	Ala	Thr	Gly	His	Tyr	Leu	Ala	Ala	Glu	Val	Asp	Pro
305					310				315					320	
Asp	Phe	Glu	Glu	Glu	Cys	Leu	Glu	Phe	Gln	Pro	Ser	Val	Asp	Pro	Asp
			325					330						335	
Gln	Asp	Ala	Ser	Arg	Ser	Arg	Leu	Arg	Asn	Ala	Gln	Glu	Lys	Met	Val
		340					345					350			
Tyr	Ser	Leu	Val	Ser	Val	Pro	Glu	Gly	Asn	Asp	Ile	Ser	Ser	Ile	Phe
		355				360						365			
Glu	Leu	Asp	Pro	Thr	Thr	Leu	Arg	Gly	Gly	Asp	Ser	Leu	Val	Pro	Arg
	370				375						380				
Asn	Ser	Tyr	Val	Arg	Leu	Arg	His	Leu	Cys	Thr	Asn	Thr	Trp	Val	His
385					390				395					400	
Ser	Thr	Asn	Ile	Pro	Ile	Asp	Lys	Glu	Glu	Lys	Pro	Val	Met	Leu	
			405					410						415	
Lys	Ile	Gly	Thr	Ser	Pro	Leu	Lys	Glu	Asp	Lys	Glu	Ala	Phe	Ala	Ile
		420					425					430			
Val	Pro	Val	Ser	Pro	Ala	Glu	Val	Arg	Asp	Leu	Asp	Phe	Ala	Asn	Asp
		435				440						445			
Ala	Ser	Lys	Val	Leu	Gly	Ser	Ile	Ala	Gly	Lys	Leu	Glu	Lys	Gly	Thr
	450					455					460				

Ile	Thr	Gln	Asn	Glu	Arg	Arg	Ser	Val	Thr	Lys	Leu	Leu	Glu	Asp	Leu
465					470					475					480
Val	Tyr	Phe	Val	Thr	Gly	Gly	Thr	Asn	Ser	Gly	Gln	Asp	Val	Leu	Glu
				485					490					495	
Val	Val	Phe	Ser	Lys	Pro	Asn	Arg	Glu	Arg	Gln	Lys	Leu	Met	Arg	Glu
			500					505					510		
Gln	Asn	Ile	Leu	Lys	Gln	Ile	Phe	Lys	Leu	Leu	Gln	Ala	Pro	Phe	Thr
		515					520					525			
Asp	Cys	Gly	Asp	Gly	Pro	Met	Leu	Arg	Leu	Glu	Glu	Leu	Gly	Asp	Gln
	530					535					540				
Arg	His	Ala	Pro	Phe	Arg	His	Ile	Cys	Arg	Leu	Cys	Tyr	Arg	Val	Leu
545					550					555					560
Arg	His	Ser	Gln	Gln	Asp	Tyr	Arg	Lys	Asn	Gln	Glu	Tyr	Ile	Ala	Lys
			565						570					575	
Gln	Phe	Gly	Phe	Met	Gln	Lys	Gln	Ile	Gly	Tyr	Asp	Val	Leu	Ala	Glu
			580					585					590		
Asp	Thr	Ile	Thr	Ala	Leu	Leu	His	Asn	Asn	Arg	Lys	Leu	Leu	Glu	Lys
	595						600					605			
His	Ile	Thr	Ala	Ala	Glu	Ile	Asp	Thr	Phe	Val	Ser	Leu	Val	Arg	Lys
	610					615					620				
Asn	Arg	Glu	Pro	Arg	Phe	Leu	Asp	Tyr	Leu	Ser	Asp	Leu	Cys	Val	Ser
625					630					635					640
Met	Asn	Lys	Ser	Ile	Pro	Val	Thr	Gln	Glu	Leu	Ile	Cys	Lys	Ala	Val
			645					650						655	
Leu	Asn	Pro	Thr	Asn	Ala	Asp	Ile	Leu	Ile	Glu	Thr	Lys	Leu	Val	Leu
			660					665					670		
Ser	Arg	Phe	Glu	Phe	Glu	Gly	Val	Ser	Thr	Gly	Glu	Asn	Ala	Leu	Glu
	675						680					685			
Ala	Gly	Glu	Asp	Glu	Glu	Glu	Val	Trp	Leu	Phe	Trp	Arg	Asp	Ser	Asn
	690					695					700				
Lys	Glu	Ile	Arg	Ser	Lys	Ser	Val	Arg	Glu	Leu	Ala	Gln	Asp	Ala	Lys
705					710					715					720
Glu	Gly	Gln	Lys	Glu	Asp	Arg	Asp	Val	Leu	Ser	Tyr	Tyr	Arg	Tyr	Gln
			725					730						735	
Leu	Asn	Leu	Phe	Ala	Arg	Met	Cys	Leu	Asp	Arg	Gln	Tyr	Leu	Ala	Ile
		740					745					750			
Asn	Glu	Ile	Ser	Gly	Gln	Leu	Asp	Val	Asp	Leu	Ile	Leu	Arg	Cys	Met
	755					760						765			
Ser	Asp	Glu	Asn	Leu	Pro	Tyr	Asp	Leu	Arg	Ala	Ser	Phe	Cys	Arg	Leu
	770					775					780				
Met	Leu	His	Met	His	Val	Asp	Arg	Asp	Pro	Gln	Glu	Gln	Val	Thr	Pro
785					790					795					800
Val	Lys	Tyr	Ala	Arg	Leu	Trp	Ser	Glu	Ile	Pro	Ser	Glu	Ile	Ala	Ile
			805						810					815	
Asp	Asp	Tyr	Asp	Ser	Ser	Gly	Ala	Ser	Lys	Asp	Glu	Ile	Lys	Glu	Arg
			820					825					830		
Phe	Ala	Gln	Thr	Met	Glu	Phe	Val	Glu	Glu	Tyr	Leu	Arg	Asp	Val	Val
		835					840					845			
Cys	Gln	Arg	Phe	Pro	Phe	Ser	Asp	Lys	Glu	Lys	Asn	Lys	Leu	Thr	Phe
	850					855					860				
Glu	Val	Val	Asn	Leu	Ala	Arg	Asn	Leu	Ile	Tyr	Phe	Gly	Phe	Tyr	Asn
865					870					875					880
Phe	Ser	Asp	Leu	Leu	Arg	Leu	Thr	Lys	Ile	Leu	Leu	Ala	Ile	Leu	Asp
			885					890						895	
Cys	Val	His	Val	Thr	Thr	Ile	Phe	Pro	Ile	Ser	Lys	Met	Thr	Lys	Gly
		900						905					910		
Glu	Glu	Asn	Lys	Gly	Ser	Asn	Val	Met	Arg	Ser	Ile	His	Gly	Val	Gly
		915					920					925			
Glu	Leu	Met	Thr	Gln	Val	Val	Leu	Arg	Gly	Gly	Gly	Phe	Leu	Pro	Met
	930					935						940			

Thr	Pro	Met	Ala	Ala	Ala	Pro	Glu	Gly	Asn	Val	Lys	Gln	Ala	Glu	Pro	945	950	955	960
Glu	Lys	Glu	Asp	Ile	Met	Val	Met	Asp	Thr	Lys	Leu	Lys	Ile	Ile	Glu	965	970		975
Ile	Leu	Gln	Phe	Ile	Leu	Asn	Val	Arg	Leu	Asp	Tyr	Arg	Ile	Ser	Cys	980	985		990
Leu	Leu	Cys	Ile	Phe	Lys	Arg	Glu	Phe	Asp	Glu	Ser	Asn	Ser	Gln	Ser	995	1000		1005
Ser	Glu	Thr	Ser	Ser	Gly	Asn	Ser	Ser	Gln	Glu	Gly	Pro	Ser	Asn	Val	1010	1015		1020
Pro	Gly	Ala	Leu	Asp	Phe	Glu	His	Ile	Glu	Glu	Gln	Ala	Glu	Gly	Ile	1025	1030		1035
Phe	Gly	Gly	Ser	Glu	Glu	Asn	Thr	Pro	Leu	Asp	Leu	Asp	Asp	His	Gly	1045	1050		1055
Gly	Arg	Thr	Phe	Leu	Arg	Val	Leu	Leu	His	Leu	Thr	Met	His	Asp	Tyr	1060	1065		1070
Pro	Pro	Leu	Val	Ser	Gly	Ala	Leu	Gln	Leu	Leu	Phe	Arg	His	Phe	Ser	1075	1080		1085
Gln	Arg	Gln	Glu	Val	Leu	Gln	Ala	Phe	Lys	Gln	Val	Gln	Leu	Leu	Val	1090	1095		1100
Thr	Ser	Gln	Asp	Val	Asp	Asn	Tyr	Lys	Gln	Ile	Lys	Gln	Asp	Leu	Asp	1105	1110		1115
Gln	Leu	Arg	Ser	Ile	Val	Glu	Lys	Ser	Glu	Leu	Trp	Val	Tyr	Lys	Gly	1125	1130		1135
Gln	Gly	Pro	Asp	Glu	Pro	Met	Asp	Gly	Ala	Ser	Gly	Glu	Asn	Glu	His	1140	1145		1150
Lys	Lys	Thr	Glu	Glu	Gly	Thr	Ser	Lys	Pro	Leu	Lys	His	Glu	Ser	Thr	1155	1160		1165
Ser	Ser	Tyr	Asn	Tyr	Arg	Val	Val	Lys	Glu	Ile	Leu	Ile	Arg	Leu	Ser	1170	1175		1180
Lys	Leu	Cys	Val	Gln	Glu	Ser	Ala	Ser	Val	Arg	Lys	Ser	Arg	Lys	Gln	1185	1190		1195
Gln	Gln	Arg	Leu	Leu	Arg	Asn	Met	Gly	Ala	His	Ala	Val	Val	Leu	Glu	1205	1210		1215
Leu	Leu	Gln	Ile	Pro	Tyr	Glu	Lys	Ala	Glu	Asp	Thr	Lys	Met	Gln	Glu	1220	1225		1230
Ile	Met	Arg	Leu	Ala	His	Glu	Phe	Leu	Gln	Asn	Phe	Cys	Ala	Gly	Asn	1235	1240		1245
Gln	Gln	Asn	Gln	Ala	Leu	Leu	His	Lys	His	Ile	Asn	Leu	Phe	Leu	Asn	1250	1255		1260
Pro	Gly	Ile	Leu	Glu	Ala	Val	Thr	Met	Gln	His	Ile	Phe	Met	Asn	Asn	1265	1270		1275
Phe	Gln	Leu	Cys	Ser	Glu	Ile	Asn	Glu	Arg	Val	Val	Gln	His	Phe	Val	1285	1290		1295
His	Cys	Ile	Glu	Thr	His	Gly	Arg	Asn	Val	Gln	Tyr	Ile	Lys	Phe	Leu	1300	1305		1310
Gln	Thr	Ile	Val	Lys	Ala	Glu	Gly	Lys	Phe	Ile	Lys	Lys	Cys	Gln	Asp	1315	1320		1325
Met	Val	Met	Ala	Glu	Leu	Val	Asn	Ser	Gly	Glu	Asp	Val	Leu	Val	Phe	1330	1335		1340
Tyr	Asn	Asp	Arg	Ala	Ser	Phe	Gln	Thr	Leu	Ile	Gln	Met	Met	Arg	Ser	1345	1350		1355
Glu	Arg	Asp	Arg	Met	Asp	Glu	Asn	Ser	Pro	Leu	Phe	Met	Tyr	His	Ile	1365	1370		1375
His	Leu	Val	Glu	Leu	Leu	Ala	Val	Cys	Thr	Glu	Gly	Lys	Asn	Val	Tyr	1380	1385		1390
Thr	Glu	Ile	Lys	Cys	Asn	Ser	Leu	Leu	Pro	Leu	Asp	Asp	Ile	Val	Arg	1395	1400		1405
Val	Val	Thr	His	Glu	Asp	Cys	Ile	Pro	Glu	Val	Lys	Ile	Ala	Tyr	Ile	1410	1415		1420

Asn Phe Leu Asn His Cys Tyr Val Asp Thr Glu Val Glu Met Lys Glu  
 1425 1430 1435 1440  
 Ile Tyr Thr Ser Asn His Met Trp Lys Leu Phe Glu Asn Phe Leu Val  
 1445 1450 1455  
 Asp Ile Cys Arg Ala Cys Asn Asn Thr Ser Asp Arg Lys His Ala Asp  
 1460 1465 1470  
 Ser Val Leu Glu Lys Tyr Val Thr Glu Ile Val Met Ser Ile Val Thr  
 1475 1480 1485  
 Thr Phe Phe Ser Ser Pro Phe Ser Asp Gln Ser Thr Thr Leu Gln Thr  
 1490 1495 1500  
 Arg Gln Pro Val Phe Val Gln Leu Leu Gln Gly Val Phe Arg Val Tyr  
 1505 1510 1515 1520  
 His Cys Asn Trp Leu Met Pro Ser Gln Lys Ala Ser Val Glu Ser Cys  
 1525 1530 1535  
 Ile Arg Val Leu Ser Asp Val Ala Lys Ser Arg Ala Ile Ala Ile Pro  
 1540 1545 1550  
 Val Asp Leu Asp Ser Gln Val Asn Asn Leu Phe Leu Lys Ser His Asn  
 1555 1560 1565  
 Ile Val Gln Lys Thr Ala Met Asn Trp Arg Leu Ser Ala Arg Asn Ala  
 1570 1575 1580  
 Ala Arg Arg Asp Glu Val Leu Ala Ala Ser Arg Asp Tyr Arg Asn Ile  
 1585 1590 1595 1600  
 Ile Glu Arg Leu Gln Asp Ile Val Ser Ala Leu Glu Asp Arg Leu Arg  
 1605 1610 1615  
 Pro Leu Val Gln Ala Glu Leu Ser Val Leu Val Asp Val Leu His Arg  
 1620 1625 1630  
 Pro Glu Leu Phe Pro Glu Asn Thr Asp Ala Arg Arg Lys Cys Glu  
 1635 1640 1645  
 Ser Gly Gly Phe Ile Cys Lys Leu Ile Lys His Thr Lys Gln Leu Leu  
 1650 1655 1660  
 Glu Glu Asn Glu Glu Lys Leu Cys Ile Lys Val Leu Gln Thr Leu Arg  
 1665 1670 1675 1680  
 Glu Met Met Thr Lys Asp Arg Gly Tyr Gly Glu Lys Gly Glu Ala Leu  
 1685 1690 1695  
 Arg Gln Ile Leu Val Asn Arg Tyr Tyr Gly Asn Ile Arg Pro Ser Gly  
 1700 1705 1710  
 Arg Arg Glu Asp Leu Thr Ser Phe Gly Asn Gly Pro Leu Ser Pro Gly  
 1715 1720 1725  
 Gly Pro Ser Lys Pro Gly Gly Gly Gly Gly Gly Pro Gly Ser Gly Ser  
 1730 1735 1740  
 Thr Ser Arg Gly Glu Met Ser Leu Ala Glu Val Gln Cys His Leu Asp  
 1745 1750 1755 1760  
 Lys Glu Gly Ala Ser Asn Leu Val Ile Asp Leu Ile Met Asn Ala Ser  
 1765 1770 1775  
 Ser Asp Arg Val Phe His Glu Ser Ile Leu Leu Ala Ile Ala Leu Leu  
 1780 1785 1790  
 Glu Gly Gly Asn Thr Thr Ile Gln His Ser Phe Phe Cys Arg Leu Thr  
 1795 1800 1805  
 Glu Asp Lys Lys Ser Glu Lys Phe Phe Lys Val Phe Tyr Asp Arg Met  
 1810 1815 1820  
 Lys Val Ala Gln Gln Glu Ile Lys Ala Thr Val Thr Val Asn Thr Ser  
 1825 1830 1835 1840  
 Asp Leu Gly Asn Lys Lys Lys Asp Asp Glu Val Asp Arg Asp Ala Pro  
 1845 1850 1855  
 Ser Arg Lys Lys Ala Lys Glu Pro Thr Thr Gln Ile Thr Glu Glu Val  
 1860 1865 1870  
 Arg Asp Gln Leu Leu Glu Ala Ser Ala Ala Thr Arg Lys Ala Phe Thr  
 1875 1880 1885  
 Thr Phe Arg Arg Glu Ala Asp Pro Asp Asp His Tyr Gln Ser Gly Glu  
 1890 1895 1900

Gly Thr Gln Ala Thr Thr Asp Lys Ala Lys Asp Asp Leu Glu Met Ser  
 1905 1910 1915 1920  
 Ala Val Ile Thr Ile Met Gln Pro Ile Leu Arg Phe Leu Gln Leu Leu  
 1925 1930 1935  
 Cys Glu Asn His Asn Arg Asp Leu Gln Asn Phe Leu Arg Cys Gln Asn  
 1940 1945 1950  
 Asn Lys Thr Asn Tyr Asn Leu Val Cys Glu Thr Leu Gln Phe Leu Asp  
 1955 1960 1965  
 Cys Ile Cys Gly Ser Thr Thr Gly Gly Leu Gly Leu Leu Gly Leu Tyr  
 1970 1975 1980  
 Ile Asn Glu Lys Asn Val Ala Leu Ile Asn Gln Thr Leu Glu Ser Leu  
 1985 1990 1995 2000  
 Thr Glu Tyr Cys Gln Gly Pro Cys His Glu Asn Gln Asn Cys Ile Ala  
 2005 2010 2015  
 Thr His Glu Ser Asn Gly Ile Asp Ile Ile Thr Ala Leu Ile Leu Asn  
 2020 2025 2030  
 Asp Ile Asn Pro Leu Gly Lys Lys Arg Met Asp Leu Val Leu Glu Leu  
 2035 2040 2045  
 Lys Asn Asn Ala Ser Lys Leu Leu Ala Ile Met Glu Ser Arg His  
 2050 2055 2060  
 Asp Ser Glu Asn Ala Glu Arg Ile Leu Tyr Asn Met Arg Pro Lys Glu  
 2065 2070 2075 2080  
 Leu Val Glu Val Ile Lys Lys Ala Tyr Met Gln Gly Glu Val Glu Phe  
 2085 2090 2095  
 Glu Asp Gly Glu Asn Gly Glu Asp Gly Ala Ala Ser Pro Arg Asn Val  
 2100 2105 2110  
 Gly His Asn Ile Tyr Ile Leu Ala His Gln Leu Ala Arg His Asn Lys  
 2115 2120 2125  
 Glu Leu Gln Thr Met Leu Lys Pro Gly Gly Gln Val Asp Gly Asp Glu  
 2130 2135 2140  
 Ala Leu Glu Phe Tyr Ala Lys His Thr Ala Gln Ile Glu Ile Val Arg  
 2145 2150 2155 2160  
 Leu Asp Arg Thr Met Glu Gln Ile Val Phe Pro Val Pro Ser Ile Cys  
 2165 2170 2175  
 Glu Phe Leu Thr Lys Glu Ser Lys Leu Arg Ile Tyr Tyr Thr Thr Glu  
 2180 2185 2190  
 Arg Asp Glu Gln Gly Ser Lys Ile Asn Asp Phe Phe Leu Arg Ser Glu  
 2195 2200 2205  
 Asp Leu Phe Asn Glu Met Asn Trp Gln Lys Lys Leu Arg Ala Gln Pro  
 2210 2215 2220  
 Val Leu Tyr Trp Cys Ala Arg Asn Met Ser Phe Trp Ser Ser Ile Ser  
 2225 2230 2235 2240  
 Phe Asn Leu Ala Val Leu Met Asn Leu Leu Val Ala Phe Phe Tyr Pro  
 2245 2250 2255  
 Phe Lys Gly Val Arg Gly Gly Thr Leu Glu Pro His Trp Ser Gly Leu  
 2260 2265 2270  
 Leu Trp Thr Ala Met Leu Ile Ser Leu Ala Ile Val Ile Ala Leu Pro  
 2275 2280 2285  
 Lys Pro His Gly Ile Arg Ala Leu Ile Ala Ser Thr Ile Leu Arg Leu  
 2290 2295 2300  
 Ile Phe Ser Val Gly Leu Gln Pro Thr Leu Phe Leu Leu Gly Ala Phe  
 2305 2310 2315 2320  
 Asn Val Cys Asn Lys Ile Ile Phe Leu Met Ser Phe Val Gly Asn Cys  
 2325 2330 2335  
 Gly Thr Phe Thr Arg Gly Tyr Arg Ala Met Val Leu Asp Val Glu Phe  
 2340 2345 2350  
 Leu Tyr His Leu Leu Tyr Leu Leu Ile Cys Ala Met Gly Leu Phe Val  
 2355 2360 2365  
 His Glu Phe Phe Tyr Ser Leu Leu Leu Phe Asp Leu Val Tyr Arg Glu  
 2370 2375 2380



Glu Thr Leu Leu Asn Val Ile Lys Ser Val Thr Arg Asn Gly Arg Pro  
 2385 2390 2395 2400  
 Ile Ile Leu Thr Ala Ala Leu Ala Leu Ile Leu Val Tyr Leu Phe Ser  
 2405 2410 2415  
 Ile Val Gly Tyr Leu Phe Phe Lys Asp Asp Phe Ile Leu Glu Val Asp  
 2420 2425 2430  
 Arg Leu Pro Asn Glu Thr Ala Gly Pro Glu Thr Gly Glu Ser Leu Ala  
 2435 2440 2445  
 Asn Asp Phe Leu Tyr Ser Asp Val Cys Arg Val Glu Thr Gly Glu Asn  
 2450 2455 2460  
 Cys Thr Ser Pro Ala Pro Lys Glu Glu Leu Leu Pro Val Glu Glu Thr  
 2465 2470 2475 2480  
 Glu Gln Asp Lys Glu His Thr Cys Glu Thr Leu Leu Met Cys Ile Val  
 2485 2490 2495  
 Thr Val Leu Ser His Gly Leu Arg Ser Gly Gly Gly Val Gly Asp Val  
 2500 2505 2510  
 Leu Arg Lys Pro Ser Lys Glu Glu Pro Leu Phe Ala Ala Arg Val Ile  
 2515 2520 2525  
 Tyr Asp Leu Leu Phe Phe Phe Met Val Ile Ile Ile Val Leu Asn Leu  
 2530 2535 2540  
 Ile Phe Gly Val Ile Ile Asp Thr Phe Ala Asp Leu Arg Ser Glu Lys  
 2545 2550 2555 2560  
 Gln Lys Lys Glu Glu Ile Leu Lys Thr Thr Cys Phe Ile Cys Gly Leu  
 2565 2570 2575  
 Glu Arg Asp Lys Phe Asp Asn Lys Thr Val Thr Phe Glu Glu His Ile  
 2580 2585 2590  
 Lys Glu Glu His Asn Met Trp His Tyr Leu Cys Phe Ile Val Leu Val  
 2595 2600 2605  
 Lys Val Lys Asp Ser Thr Glu Tyr Thr Gly Pro Glu Ser Tyr Val Ala  
 2610 2615 2620  
 Glu Met Ile Arg Glu Arg Asn Leu Asp Trp Phe Pro Arg Met Arg Ala  
 2625 2630 2635 2640  
 Met Ser Leu Val Ser Ser Asp Ser Glu Gly Glu Gln Asn Glu Leu Arg  
 2645 2650 2655  
 Asn Leu Gln Glu Lys Leu Glu Ser Thr Met Lys Leu Val Thr Asn Leu  
 2660 2665 2670  
 Ser Gly Gln Leu Ser Glu Leu Lys Asp Gln Met Thr Glu Gln Arg Lys  
 2675 2680 2685  
 Gln Lys Gln Arg Ile Gly Leu Leu Gly His Pro Pro His Met Asn Val  
 2690 2695 2700  
 Asn Pro Gln Gln Pro Ala  
 2705 2710

&lt;210&gt; 16

&lt;211&gt; 2749

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

 <223> Description of Artificial Sequence:/note =  
 synthetic construct

&lt;400&gt; 16

Met Ser Asp Lys Met Ser Ser Phe Leu His Ile Gly Asp Ile Cys Ser  
 1 5 10 15  
 Leu Tyr Ala Glu Gly Ser Thr Asn Gly Phe Ile Ser Thr Leu Gly Leu  
 20 25 30  
 Val Asp Asp Arg Cys Val Val Gln Pro Glu Ala Gly Asp Leu Asn Asn  
 35 40 45

Pro	Pro	Lys	Lys	Phe	Arg	Asp	Cys	Leu	Phe	Lys	Leu	Cys	Pro	Met	Asn
50	50					55					60				
Arg	Tyr	Ser	Ala	Gln	Lys	Gln	Phe	Trp	Lys	Ala	Ala	Lys	Pro	Gly	Ala
65					70				75					80	
Asn	Ser	Thr	Thr	Asp	Ala	Val	Leu	Leu	Asn	Lys	Leu	His	His	Ala	Ala
				85					90					95	
Asp	Leu	Glu	Lys	Lys	Gln	Asn	Glu	Thr	Glu	Asn	Arg	Lys	Leu	Leu	Gly
			100					105					110		
Thr	Val	Ile	Gln	Tyr	Gly	Asn	Val	Ile	Gln	Leu	Leu	His	Leu	Lys	Ser
		115					120					125			
Asn	Lys	Tyr	Leu	Thr	Val	Asn	Lys	Arg	Leu	Pro	Ala	Leu	Leu	Glu	Lys
	130					135					140				
Asn	Ala	Met	Arg	Val	Thr	Leu	Asp	Glu	Ala	Gly	Asn	Glu	Gly	Ser	Trp
145					150					155					160
Phe	Tyr	Ile	Gln	Pro	Phe	Tyr	Lys	Leu	Arg	Ser	Ile	Gly	Asp	Ser	Val
				165					170					175	
Val	Ile	Gly	Asp	Lys	Val	Val	Leu	Asn	Pro	Val	Asn	Ala	Gly	Gln	Pro
			180					185					190		
Leu	His	Ala	Ser	Ser	His	Gln	Leu	Val	Asp	Asn	Pro	Gly	Cys	Asn	Glu
		195					200					205			
Val	Asn	Ser	Val	Asn	Cys	Asn	Thr	Ser	Trp	Lys	Ile	Val	Leu	Phe	Met
	210					215					220				
Lys	Trp	Ser	Asp	Asn	Lys	Asp	Asp	Ile	Leu	Lys	Gly	Gly	Asp	Val	Val
225					230					235					240
Arg	Leu	Phe	His	Ala	Glu	Gln	Glu	Lys	Phe	Leu	Thr	Cys	Asp	Glu	His
				245					250					255	
Arg	Lys	Lys	Gln	His	Val	Phe	Leu	Arg	Thr	Thr	Gly	Arg	Gln	Ser	Ala
			260					265					270		
Thr	Ser	Ala	Thr	Ser	Ser	Lys	Ala	Leu	Trp	Glu	Val	Glu	Val	Val	Gln
		275					280					285			
His	Asp	Pro	Cys	Arg	Gly	Gly	Ala	Gly	Tyr	Trp	Asn	Ser	Leu	Phe	Arg
	290					295					300				
Phe	Lys	His	Leu	Ala	Thr	Gly	His	Tyr	Leu	Ala	Ala	Glu	Val	Asp	Pro
305					310					315					320
Asp	Phe	Glu	Glu	Glu	Cys	Leu	Glu	Phe	Gln	Pro	Ser	Val	Asp	Pro	Asp
				325					330					335	
Gln	Asp	Ala	Ser	Arg	Ser	Arg	Leu	Arg	Asn	Ala	Gln	Glu	Lys	Met	Val
			340					345					350		
Tyr	Ser	Leu	Val	Ser	Val	Pro	Glu	Gly	Asn	Asp	Ile	Ser	Ser	Ile	Phe
		355					360					365			
Glu	Leu	Asp	Pro	Thr	Thr	Leu	Arg	Gly	Gly	Asp	Ser	Leu	Val	Pro	Arg
		370				375					380				
Asn	Ser	Tyr	Val	Arg	Leu	Arg	His	Leu	Cys	Thr	Asn	Thr	Trp	Val	His
385					390					395					400
Ser	Thr														

Asp Cys Gly Asp Gly Pro Met Leu Arg Leu Glu Glu Leu Gly Asp Gln  
 530 535 540  
 Arg His Ala Pro Phe Arg His Ile Cys Arg Leu Cys Tyr Arg Val Leu  
 545 550 555 560  
 Arg His Ser Gln Gln Asp Tyr Arg Lys Asn Gln Glu Tyr Ile Ala Lys  
 565 570 575  
 Gln Phe Gly Phe Met Gln Lys Gln Ile Gly Tyr Asp Val Leu Ala Glu  
 580 585 590  
 Asp Thr Ile Thr Ala Leu Leu His Asn Asn Arg Lys Leu Leu Glu Lys  
 595 600 605  
 His Ile Thr Ala Ala Glu Ile Asp Thr Phe Val Ser Leu Val Arg Lys  
 610 615 620  
 Asn Arg Glu Pro Arg Phe Leu Asp Tyr Leu Ser Asp Leu Cys Val Ser  
 625 630 635 640  
 Met Asn Lys Ser Ile Pro Val Thr Gln Glu Leu Ile Cys Lys Ala Val  
 645 650 655  
 Leu Asn Pro Thr Asn Ala Asp Ile Leu Ile Glu Thr Lys Leu Val Leu  
 660 665 670  
 Ser Arg Phe Glu Phe Glu Gly Val Ser Thr Gly Glu Asn Ala Leu Glu  
 675 680 685  
 Ala Gly Glu Asp Glu Glu Glu Val Trp Leu Phe Trp Arg Asp Ser Asn  
 690 695 700  
 Lys Glu Ile Arg Ser Lys Ser Val Arg Glu Leu Ala Gln Asp Ala Lys  
 705 710 715 720  
 Glu Gly Gln Lys Glu Asp Arg Asp Val Leu Ser Tyr Tyr Arg Tyr Gln  
 725 730 735  
 Leu Asn Leu Phe Ala Arg Met Cys Leu Asp Arg Gln Tyr Leu Ala Ile  
 740 745 750  
 Asn Glu Ile Ser Gly Gln Leu Asp Val Asp Leu Ile Leu Arg Cys Met  
 755 760 765  
 Ser Asp Glu Asn Leu Pro Tyr Asp Leu Arg Ala Ser Phe Cys Arg Leu  
 770 775 780  
 Met Leu His Met His Val Asp Arg Asp Pro Gln Glu Gln Val Thr Pro  
 785 790 795 800  
 Val Lys Tyr Ala Arg Leu Trp Ser Glu Ile Pro Ser Glu Ile Ala Ile  
 805 810 815  
 Asp Asp Tyr Asp Ser Ser Gly Ala Ser Lys Asp Glu Ile Lys Glu Arg  
 820 825 830  
 Phe Ala Gln Thr Met Glu Phe Val Glu Glu Tyr Leu Arg Asp Val Val  
 835 840 845  
 Cys Gln Arg Phe Pro Phe Ser Asp Lys Glu Lys Asn Lys Leu Thr Phe  
 850 855 860  
 Glu Val Val Asn Leu Ala Arg Asn Leu Ile Tyr Phe Gly Phe Tyr Asn  
 865 870 875 880  
 Phe Ser Asp Leu Leu Arg Leu Thr Lys Ile Leu Leu Ala Ile Leu Asp  
 885 890 895  
 Cys Val His Val Thr Thr Ile Phe Pro Ile Ser Lys Met Thr Lys Gly  
 900 905 910  
 Glu Glu Asn Lys Gly Ser Asn Val Met Arg Ser Ile His Gly Val Gly  
 915 920 925  
 Glu Leu Met Thr Gln Val Val Leu Arg Gly Gly Gly Phe Leu Pro Met  
 930 935 940  
 Thr Pro Met Ala Ala Ala Pro Glu Gly Asn Val Lys Gln Ala Glu Pro  
 945 950 955 960  
 Glu Lys Glu Asp Ile Met Val Met Asp Thr Lys Leu Lys Ile Ile Glu  
 965 970 975  
 Ile Leu Gln Phe Ile Leu Asn Val Arg Leu Asp Tyr Arg Ile Ser Cys  
 980 985 990  
 Leu Leu Cys Ile Phe Lys Arg Glu Phe Asp Glu Ser Asn Ser Gln Ser  
 995 1000 1005

Ser Glu Thr Ser Ser Gly Asn Ser Ser Gln Glu Gly Pro Ser Asn Val  
 1010 1015 1020  
 Pro Gly Ala Leu Asp Phe Glu His Ile Glu Glu Gln Ala Glu Gly Ile  
 1025 1030 1035 1040  
 Phe Gly Gly Ser Glu Glu Asn Thr Pro Leu Asp Leu Asp Asp His Gly  
 1045 1050 1055  
 Gly Arg Thr Phe Leu Arg Val Leu Leu His Leu Thr Met His Asp Tyr  
 1060 1065 1070  
 Pro Pro Leu Val Ser Gly Ala Leu Gln Leu Leu Phe Arg His Phe Ser  
 1075 1080 1085  
 Gln Arg Gln Glu Val Leu Gln Ala Phe Lys Gln Val Gln Leu Leu Val  
 1090 1095 1100  
 Thr Ser Gln Asp Val Asp Asn Tyr Lys Gln Ile Lys Gln Asp Leu Asp  
 1105 1110 1115 1120  
 Gln Leu Arg Ser Ile Val Glu Lys Ser Glu Leu Trp Val Tyr Lys Gly  
 1125 1130 1135  
 Gln Gly Pro Asp Glu Pro Met Asp Gly Ala Ser Gly Glu Asn Glu His  
 1140 1145 1150  
 Lys Lys Thr Glu Glu Gly Thr Ser Lys Pro Leu Lys His Glu Ser Thr  
 1155 1160 1165  
 Ser Ser Tyr Asn Tyr Arg Val Val Lys Glu Ile Leu Ile Arg Leu Ser  
 1170 1175 1180  
 Lys Leu Cys Val Gln Glu Ser Ala Ser Val Arg Lys Ser Arg Lys Gln  
 1185 1190 1195 1200  
 Gln Gln Arg Leu Leu Arg Asn Met Gly Ala His Ala Val Val Leu Glu  
 1205 1210 1215  
 Leu Leu Gln Ile Pro Tyr Glu Lys Ala Glu Asp Thr Lys Met Gln Glu  
 1220 1225 1230  
 Ile Met Arg Leu Ala His Glu Phe Leu Gln Asn Phe Cys Ala Gly Asn  
 1235 1240 1245  
 Gln Gln Asn Gln Ala Leu Leu His Lys His Ile Asn Leu Phe Leu Asn  
 1250 1255 1260  
 Pro Gly Ile Leu Glu Ala Val Thr Met Gln His Ile Phe Met Asn Asn  
 1265 1270 1275 1280  
 Phe Gln Leu Cys Ser Glu Ile Asn Glu Arg Val Val Gln His Phe Val  
 1285 1290 1295  
 His Cys Ile Glu Thr His Gly Arg Asn Val Gln Tyr Ile Lys Phe Leu  
 1300 1305 1310  
 Gln Thr Ile Val Lys Ala Glu Gly Lys Phe Ile Lys Lys Cys Gln Asp  
 1315 1320 1325  
 Met Val Met Ala Glu Leu Val Asn Ser Gly Glu Asp Val Leu Val Phe  
 1330 1335 1340  
 Tyr Asn Asp Arg Ala Ser Phe Gln Thr Leu Ile Gln Met Met Arg Ser  
 1345 1350 1355 1360  
 Glu Arg Asp Arg Met Asp Glu Asn Ser Pro Leu Phe Met Tyr His Ile  
 1365 1370 1375  
 His Leu Val Glu Leu Leu Ala Val Cys Thr Glu Gly Lys Asn Val Tyr  
 1380 1385 1390  
 Thr Glu Ile Lys Cys Asn Ser Leu Leu Pro Leu Asp Asp Ile Val Arg  
 1395 1400 1405  
 Val Val Thr His Glu Asp Cys Ile Pro Glu Val Lys Ile Ala Tyr Ile  
 1410 1415 1420  
 Asn Phe Leu Asn His Cys Tyr Val Asp Thr Glu Val Glu Met Lys Glu  
 1425 1430 1435 1440  
 Ile Tyr Thr Ser Asn His Met Trp Lys Leu Phe Glu Asn Phe Leu Val  
 1445 1450 1455  
 Asp Ile Cys Arg Ala Cys Asn Asn Thr Ser Asp Arg Lys His Ala Asp  
 1460 1465 1470  
 Ser Val Leu Glu Lys Tyr Val Thr Glu Ile Val Met Ser Ile Val Thr  
 1475 1480 1485

Thr Phe Phe Ser Ser Pro Phe Ser Asp Gln Ser Thr Thr Leu Gln Thr  
 1490 1495 1500  
 Arg Gln Pro Val Phe Val Gln Leu Leu Gln Gly Val Phe Arg Val Tyr  
 1505 1510 1515 1520  
 His Cys Asn Trp Leu Met Pro Ser Gln Lys Ala Ser Val Glu Ser Cys  
 1525 1530 1535  
 Ile Arg Val Leu Ser Asp Val Ala Lys Ser Arg Ala Ile Ala Ile Pro  
 1540 1545 1550  
 Val Asp Leu Asp Ser Gln Val Asn Asn Leu Phe Leu Lys Ser His Asn  
 1555 1560 1565  
 Ile Val Gln Lys Thr Ala Met Asn Trp Arg Leu Ser Ala Arg Asn Ala  
 1570 1575 1580  
 Ala Arg Arg Asp Glu Val Leu Ala Ala Ser Arg Asp Tyr Arg Asn Ile  
 1585 1590 1595 1600  
 Ile Glu Arg Leu Gln Asp Ile Val Ser Ala Leu Glu Asp Arg Leu Arg  
 1605 1610 1615  
 Pro Leu Val Gln Ala Glu Leu Ser Val Leu Val Asp Val Leu His Arg  
 1620 1625 1630  
 Pro Glu Leu Leu Phe Pro Glu Asn Thr Asp Ala Arg Arg Lys Cys Glu  
 1635 1640 1645  
 Ser Gly Gly Phe Ile Cys Lys Leu Ile Lys His Thr Lys Gln Leu Leu  
 1650 1655 1660  
 Glu Glu Asn Glu Glu Lys Leu Cys Ile Lys Val Leu Gln Thr Leu Arg  
 1665 1670 1675 1680  
 Glu Met Met Thr Lys Asp Arg Gly Tyr Gly Glu Lys Gln Ile Ser Ile  
 1685 1690 1695  
 Asp Glu Leu Glu Asn Ala Glu Leu Pro Gln Pro Pro Glu Ala Glu Asn  
 1700 1705 1710  
 Ser Thr Glu Glu Leu Glu Pro Ser Pro Pro Leu Arg Gln Leu Glu Asp  
 1715 1720 1725  
 His Lys Arg Gly Glu Ala Leu Arg Gln Ile Leu Val Asn Arg Tyr Tyr  
 1730 1735 1740  
 Gly Asn Ile Arg Pro Ser Gly Arg Arg Glu Asp Leu Thr Ser Phe Gly  
 1745 1750 1755 1760  
 Asn Gly Pro Leu Ser Pro Gly Gly Pro Ser Lys Pro Gly Gly Gly Gly  
 1765 1770 1775  
 Gly Gly Pro Gly Ser Gly Ser Thr Ser Arg Gly Glu Met Ser Leu Ala  
 1780 1785 1790  
 Glu Val Gln Cys His Leu Asp Lys Glu Gly Ala Ser Asn Leu Val Ile  
 1795 1800 1805  
 Asp Leu Ile Met Asn Ala Ser Ser Asp Arg Val Phe His Glu Ser Ile  
 1810 1815 1820  
 Leu Leu Ala Ile Ala Leu Leu Glu Gly Gly Asn Thr Thr Ile Gln His  
 1825 1830 1835 1840  
 Ser Phe Phe Cys Arg Leu Thr Glu Asp Lys Lys Ser Glu Lys Phe Phe  
 1845 1850 1855  
 Lys Val Phe Tyr Asp Arg Met Lys Val Ala Gln Gln Glu Ile Lys Ala  
 1860 1865 1870  
 Thr Val Thr Val Asn Thr Ser Asp Leu Gly Asn Lys Lys Lys Asp Asp  
 1875 1880 1885  
 Glu Val Asp Arg Asp Ala Pro Ser Arg Lys Lys Ala Lys Glu Pro Thr  
 1890 1895 1900  
 Thr Gln Ile Thr Glu Glu Val Arg Asp Gln Leu Leu Glu Ala Ser Ala  
 1905 1910 1915 1920  
 Ala Thr Arg Lys Ala Phe Thr Thr Phe Arg Arg Glu Ala Asp Pro Asp  
 1925 1930 1935  
 Asp His Tyr Gln Ser Gly Glu Gly Thr Gln Ala Thr Thr Asp Lys Ala  
 1940 1945 1950  
 Lys Asp Asp Leu Glu Met Ser Ala Val Ile Thr Ile Met Gln Pro Ile  
 1955 1960 1965

Leu Arg Phe Leu Gln Leu Leu Cys Glu Asn His Asn Arg Asp Leu Gln  
 1970 1975 1980  
 Asn Phe Leu Arg Cys Gln Asn Asn Lys Thr Asn Tyr Asn Leu Val Cys  
 1985 1990 1995 2000  
 Glu Thr Leu Gln Phe Leu Asp Cys Ile Cys Gly Ser Thr Thr Gly Gly  
 2005 2010 2015  
 Leu Gly Leu Leu Gly Leu Tyr Ile Asn Glu Lys Asn Val Ala Leu Ile  
 2020 2025 2030  
 Asn Gln Thr Leu Glu Ser Leu Thr Glu Tyr Cys Gln Gly Pro Cys His  
 2035 2040 2045  
 Glu Asn Gln Asn Cys Ile Ala Thr His Glu Ser Asn Gly Ile Asp Ile  
 2050 2055 2060  
 Ile Thr Ala Leu Ile Leu Asn Asp Ile Asn Pro Leu Gly Lys Lys Arg  
 2065 2070 2075 2080  
 Met Asp Leu Val Leu Glu Leu Lys Asn Asn Ala Ser Lys Leu Leu Leu  
 2085 2090 2095  
 Ala Ile Met Glu Ser Arg His Asp Ser Glu Asn Ala Glu Arg Ile Leu  
 2100 2105 2110  
 Tyr Asn Met Arg Pro Lys Glu Leu Val Glu Val Ile Lys Lys Ala Tyr  
 2115 2120 2125  
 Met Gln Gly Glu Val Glu Phe Glu Asp Gly Glu Asn Gly Glu Asp Gly  
 2130 2135 2140  
 Ala Ala Ser Pro Arg Asn Val Gly His Asn Ile Tyr Ile Leu Ala His  
 2145 2150 2155 2160  
 Gln Leu Ala Arg His Asn Lys Glu Leu Gln Thr Met Leu Lys Pro Gly  
 2165 2170 2175  
 Gly Gln Val Asp Gly Asp Glu Ala Leu Glu Phe Tyr Ala Lys His Thr  
 2180 2185 2190  
 Ala Gln Ile Glu Ile Val Arg Leu Asp Arg Thr Met Glu Gln Ile Val  
 2195 2200 2205  
 Phe Pro Val Pro Ser Ile Cys Glu Phe Leu Thr Lys Glu Ser Lys Leu  
 2210 2215 2220  
 Arg Ile Tyr Tyr Thr Thr Glu Arg Asp Glu Gln Gly Ser Lys Ile Asn  
 2225 2230 2235 2240  
 Asp Phe Phe Leu Arg Ser Glu Asp Leu Phe Asn Glu Met Asn Trp Gln  
 2245 2250 2255  
 Lys Lys Leu Arg Ala Gln Pro Val Leu Tyr Trp Cys Ala Arg Asn Met  
 2260 2265 2270  
 Ser Phe Trp Ser Ser Ile Ser Phe Asn Leu Ala Val Leu Met Asn Leu  
 2275 2280 2285  
 Leu Val Ala Phe Phe Tyr Pro Phe Lys Gly Val Arg Gly Gly Thr Leu  
 2290 2295 2300  
 Glu Pro His Trp Ser Gly Leu Leu Trp Thr Ala Met Leu Ile Ser Leu  
 2305 2310 2315 2320  
 Ala Ile Val Ile Ala Leu Pro Lys Pro His Gly Ile Arg Ala Leu Ile  
 2325 2330 2335  
 Ala Ser Thr Ile Leu Arg Leu Ile Phe Ser Val Gly Leu Gln Pro Thr  
 2340 2345 2350  
 Leu Phe Leu Leu Gly Ala Phe Asn Val Cys Asn Lys Ile Ile Phe Leu  
 2355 2360 2365  
 Met Ser Phe Val Gly Asn Cys Gly Thr Phe Thr Arg Gly Tyr Arg Ala  
 2370 2375 2380  
 Met Val Leu Asp Val Glu Phe Leu Tyr His Leu Leu Tyr Leu Leu Ile  
 2385 2390 2395 2400  
 Cys Ala Met Gly Leu Phe Val His Glu Phe Phe Tyr Ser Leu Leu Leu  
 2405 2410 2415  
 Phe Asp Leu Val Tyr Arg Glu Glu Thr Leu Leu Asn Val Ile Lys Ser  
 2420 2425 2430  
 Val Thr Arg Asn Gly Arg Pro Ile Ile Leu Thr Ala Ala Leu Ala Leu  
 2435 2440 2445

Ile Leu Val Tyr Leu Phe Ser Ile Val Gly Tyr Leu Phe Phe Lys Asp  
 2450 2455 2460  
 Asp Phe Ile Leu Glu Val Asp Arg Leu Pro Asn Glu Thr Ala Gly Pro  
 2465 2470 2475 2480  
 Glu Thr Gly Glu Ser Leu Ala Asn Asp Phe Leu Tyr Ser Asp Val Cys  
 2485 2490 2495  
 Arg Val Glu Thr Gly Glu Asn Cys Thr Ser Pro Ala Pro Lys Glu Glu  
 2500 2505 2510  
 Leu Leu Pro Val Glu Glu Thr Glu Gln Asp Lys Glu His Thr Cys Glu  
 2515 2520 2525  
 Thr Leu Leu Met Cys Ile Val Thr Val Leu Ser His Gly Leu Arg Ser  
 2530 2535 2540  
 Gly Gly Gly Val Gly Asp Val Leu Arg Lys Pro Ser Lys Glu Glu Pro  
 2545 2550 2555 2560  
 Leu Phe Ala Ala Arg Val Ile Tyr Asp Leu Leu Phe Phe Phe Met Val  
 2565 2570 2575  
 Ile Ile Ile Val Leu Asn Leu Ile Phe Gly Val Ile Ile Asp Thr Phe  
 2580 2585 2590  
 Ala Asp Leu Arg Ser Glu Lys Gln Lys Lys Glu Glu Ile Leu Lys Thr  
 2595 2600 2605  
 Thr Cys Phe Ile Cys Gly Leu Glu Arg Asp Lys Phe Asp Asn Lys Thr  
 2610 2615 2620  
 Val Thr Phe Glu Glu His Ile Lys Glu Glu His Asn Met Trp His Tyr  
 2625 2630 2635 2640  
 Leu Cys Phe Ile Val Leu Val Lys Val Lys Asp Ser Thr Glu Tyr Thr  
 2645 2650 2655  
 Gly Pro Glu Ser Tyr Val Ala Glu Met Ile Arg Glu Arg Asn Leu Asp  
 2660 2665 2670  
 Trp Phe Pro Arg Met Arg Ala Met Ser Leu Val Ser Ser Asp Ser Glu  
 2675 2680 2685  
 Gly Glu Gln Asn Glu Leu Arg Asn Leu Gln Glu Lys Leu Glu Ser Thr  
 2690 2695 2700  
 Met Lys Leu Val Thr Asn Leu Ser Gly Gln Leu Ser Glu Leu Lys Asp  
 2705 2710 2715 2720  
 Gln Met Thr Glu Gln Arg Lys Gln Lys Gln Arg Ile Gly Leu Leu Gly  
 2725 2730 2735  
 His Pro Pro His Met Asn Val Asn Pro Gln Gln Pro Ala  
 2740 2745

&lt;210&gt; 17

&lt;211&gt; 2710

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence:/note =  
 synthetic construct

&lt;400&gt; 17

Met Ser Asp Lys Met Ser Ser Phe Leu His Ile Gly Asp Ile Cys Ser  
 1 5 10 15  
 Leu Tyr Ala Glu Gly Ser Thr Asn Gly Phe Ile Ser Thr Leu Gly Leu  
 20 25 30  
 Val Asp Asp Arg Cys Val Val Gln Pro Glu Ala Gly Asp Leu Asn Asn  
 35 40 45  
 Pro Pro Lys Lys Phe Arg Asp Cys Leu Phe Lys Leu Cys Pro Met Asn  
 50 55 60  
 Arg Tyr Ser Ala Gln Lys Gln Phe Trp Lys Ala Ala Lys Pro Gly Ala  
 65 70 75 80

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Asn Ser Thr Thr Asp Ala Val Leu Leu Asn Lys Leu His His Ala Ala
      85                      90                      95
Asp Leu Glu Lys Lys Gln Asn Glu Thr Glu Asn Arg Lys Leu Leu Gly
      100                    105                    110
Thr Val Ile Gln Tyr Gly Asn Val Ile Gln Leu Leu His Leu Lys Ser
      115                    120                    125
Asn Lys Tyr Leu Thr Val Asn Lys Arg Leu Pro Ala Leu Leu Glu Lys
      130                    135                    140
Asn Ala Met Arg Val Thr Leu Asp Glu Ala Gly Asn Glu Gly Ser Trp
145      150                    155                    160
Phe Tyr Ile Gln Pro Phe Tyr Lys Leu Arg Ser Ile Gly Asp Ser Val
      165                    170                    175
Val Ile Gly Asp Lys Val Val Leu Asn Pro Val Asn Ala Gly Gln Pro
      180                    185                    190
Leu His Ala Ser Ser His Gln Leu Val Asp Asn Pro Gly Cys Asn Glu
      195                    200                    205
Val Asn Ser Val Asn Cys Asn Thr Ser Trp Lys Ile Val Leu Phe Met
      210                    215                    220
Lys Trp Ser Asp Asn Lys Asp Asp Ile Leu Lys Gly Gly Asp Val Val
225      230                    235                    240
Arg Leu Phe His Ala Glu Gln Glu Lys Phe Leu Thr Cys Asp Glu His
      245                    250                    255
Arg Lys Lys Gln His Val Phe Leu Arg Thr Thr Gly Arg Gln Ser Ala
      260                    265                    270
Thr Ser Ala Thr Ser Ser Lys Ala Leu Trp Glu Val Glu Val Val Gln
      275                    280                    285
His Asp Pro Cys Arg Gly Gly Ala Gly Tyr Trp Asn Ser Leu Phe Arg
      290                    295                    300
Phe Lys His Leu Ala Thr Gly His Tyr Leu Ala Ala Glu Val Asp Pro
305      310                    315                    320
Asp Phe Glu Glu Glu Cys Leu Glu Phe Gln Pro Ser Val Asp Pro Asp
      325                    330                    335
Gln Asp Ala Ser Arg Ser Arg Leu Arg Asn Ala Gln Glu Lys Met Val
      340                    345                    350
Tyr Ser Leu Val Ser Val Pro Glu Gly Asn Asp Ile Ser Ser Ile Phe
      355                    360                    365
Glu Leu Asp Pro Thr Thr Leu Arg Gly Gly Asp Ser Leu Val Pro Arg
      370                    375                    380
Asn Ser Tyr Val Arg Leu Arg His Leu Cys Thr Asn Thr Trp Val His
385      390                    395                    400
Ser Thr Asn Ile Pro Ile Asp Lys Glu Glu Glu Lys Pro Val Met Leu
      405                    410                    415
Lys Ile Gly Thr Ser Pro Leu Lys Glu Asp Lys Glu Ala Phe Ala Ile
      420                    425                    430
Val Pro Val Ser Pro Ala Glu Val Arg Asp Leu Asp Phe Ala Asn Asp
      435                    440                    445
Ala Ser Lys Val Leu Gly Ser Ile Ala Gly Lys Leu Glu Lys Gly Thr
      450                    455                    460
Ile Thr Gln Asn Glu Arg Arg Ser Val Thr Lys Leu Leu Glu Asp Leu
465      470                    475                    480
Val Tyr Phe Val Thr Gly Gly Thr Asn Ser Gly Gln Asp Val Leu Glu
      485                    490                    495
Val Val Phe Ser Lys Pro Asn Arg Glu Arg Gln Lys Leu Met Arg Glu
      500                    505                    510
Gln Asn Ile Leu Lys Gln Ile Phe Lys Leu Leu Gln Ala Pro Phe Thr
      515                    520                    525
Asp Cys Gly Asp Gly Pro Met Leu Arg Leu Glu Glu Leu Gly Asp Gln
530      535                    540                    545
Arg His Ala Pro Phe Arg His Ile Cys Arg Leu Cys Tyr Arg Val Leu
545      550                    555                    560

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Arg His Ser Gln Gln Asp Tyr Arg Lys Asn Gln Glu Tyr Ile Ala Lys
      565                      570                      575
Gln Phe Gly Phe Met Gln Lys Gln Ile Gly Tyr Asp Val Leu Ala Glu
      580                      585                      590
Asp Thr Ile Thr Ala Leu Leu His Asn Asn Arg Lys Leu Leu Glu Lys
      595                      600                      605
His Ile Thr Ala Ala Glu Ile Asp Thr Phe Val Ser Leu Val Arg Lys
      610                      615                      620
Asn Arg Glu Pro Arg Phe Leu Asp Tyr Leu Ser Asp Leu Cys Val Ser
      625                      630                      635                      640
Met Asn Lys Ser Ile Pro Val Thr Gln Glu Leu Ile Cys Lys Ala Val
      645                      650                      655
Leu Asn Pro Thr Asn Ala Asp Ile Leu Ile Glu Thr Lys Leu Val Leu
      660                      665                      670
Ser Arg Phe Glu Phe Glu Gly Val Ser Thr Gly Glu Asn Ala Leu Glu
      675                      680                      685
Ala Gly Glu Asp Glu Glu Glu Val Trp Leu Phe Trp Arg Asp Ser Asn
      690                      695                      700
Lys Glu Ile Arg Ser Lys Ser Val Arg Glu Leu Ala Gln Asp Ala Lys
      705                      710                      715                      720
Glu Gly Gln Lys Glu Asp Arg Asp Val Leu Ser Tyr Tyr Arg Tyr Gln
      725                      730                      735
Leu Asn Leu Phe Ala Arg Met Cys Leu Asp Arg Gln Tyr Leu Ala Ile
      740                      745                      750
Asn Glu Ile Ser Gly Gln Leu Asp Val Asp Leu Ile Leu Arg Cys Met
      755                      760                      765
Ser Asp Glu Asn Leu Pro Tyr Asp Leu Arg Ala Ser Phe Cys Arg Leu
      770                      775                      780
Met Leu His Met His Val Asp Arg Asp Pro Gln Glu Gln Val Thr Pro
      785                      790                      795                      800
Val Lys Tyr Ala Arg Leu Trp Ser Glu Ile Pro Ser Glu Ile Ala Ile
      805                      810                      815
Asp Asp Tyr Asp Ser Ser Gly Ala Ser Lys Asp Glu Ile Lys Glu Arg
      820                      825                      830
Phe Ala Gln Thr Met Glu Phe Val Glu Glu Tyr Leu Arg Asp Val Val
      835                      840                      845
Cys Gln Arg Phe Pro Phe Ser Asp Lys Glu Lys Asn Lys Leu Thr Phe
      850                      855                      860
Glu Val Val Asn Leu Ala Arg Asn Leu Ile Tyr Phe Gly Phe Tyr Asn
      865                      870                      875                      880
Phe Ser Asp Leu Leu Arg Leu Thr Lys Ile Leu Leu Ala Ile Leu Asp
      885                      890                      895
Cys Val His Val Thr Thr Ile Phe Pro Ile Ser Lys Met Thr Lys Gly
      900                      905                      910
Glu Glu Asn Lys Gly Ser Asn Val Met Arg Ser Ile His Gly Val Gly
      915                      920                      925
Glu Leu Met Thr Gln Val Val Leu Arg Gly Gly Gly Phe Leu Pro Met
      930                      935                      940
Thr Pro Met Ala Ala Ala Pro Glu Gly Asn Val Lys Gln Ala Glu Pro
      945                      950                      955                      960
Glu Lys Glu Asp Ile Met Val Met Asp Thr Lys Leu Lys Ile Ile Glu
      965                      970                      975
Ile Leu Gln Phe Ile Leu Asn Val Arg Leu Asp Tyr Arg Ile Ser Cys
      980                      985                      990
Leu Leu Cys Ile Phe Lys Arg Glu Phe Asp Glu Ser Asn Ser Gln Ser
      995                      1000                      1005
Ser Glu Thr Ser Ser Gly Asn Ser Ser Gln Glu Gly Pro Ser Asn Val
      1010                      1015                      1020
Pro Gly Ala Leu Asp Phe Glu His Ile Glu Glu Gln Ala Glu Gly Ile
      1025                      1030                      1035                      1040

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Phe Gly Gly Ser Glu Glu Asn Thr Pro Leu Asp Leu Asp Asp His Gly
      1045                      1050                      1055
Gly Arg Thr Phe Leu Arg Val Leu Leu His Leu Thr Met His Asp Tyr
      1060                      1065                      1070
Pro Pro Leu Val Ser Gly Ala Leu Gln Leu Leu Phe Arg His Phe Ser
      1075                      1080                      1085
Gln Arg Gln Glu Val Leu Gln Ala Phe Lys Gln Val Gln Leu Leu Val
      1090                      1095                      1100
Thr Ser Gln Asp Val Asp Asn Tyr Lys Gln Ile Lys Gln Asp Leu Asp
1105                      1110                      1115                      1120
Gln Leu Arg Ser Ile Val Glu Lys Ser Glu Leu Trp Val Tyr Lys Gly
      1125                      1130                      1135
Gln Gly Pro Asp Glu Pro Met Asp Gly Ala Ser Gly Glu Asn Glu His
      1140                      1145                      1150
Lys Lys Thr Glu Glu Gly Thr Ser Lys Pro Leu Lys His Glu Ser Thr
      1155                      1160                      1165
Ser Ser Tyr Asn Tyr Arg Val Val Lys Glu Ile Leu Ile Arg Leu Ser
      1170                      1175                      1180
Lys Leu Cys Val Gln Glu Ser Ala Ser Val Arg Lys Ser Arg Lys Gln
1185                      1190                      1195                      1200
Gln Gln Arg Leu Leu Arg Asn Met Gly Ala His Ala Val Val Leu Glu
      1205                      1210                      1215
Leu Leu Gln Ile Pro Tyr Glu Lys Ala Glu Asp Thr Lys Met Gln Glu
      1220                      1225                      1230
Ile Met Arg Leu Ala His Glu Phe Leu Gln Asn Phe Cys Ala Gly Asn
      1235                      1240                      1245
Gln Gln Asn Gln Ala Leu Leu His Lys His Ile Asn Leu Phe Leu Asn
      1250                      1255                      1260
Pro Gly Ile Leu Glu Ala Val Thr Met Gln His Ile Phe Met Asn Asn
1265                      1270                      1275                      1280
Phe Gln Leu Cys Ser Glu Ile Asn Glu Arg Val Val Gln His Phe Val
      1285                      1290                      1295
His Cys Ile Glu Thr His Gly Arg Asn Val Gln Tyr Ile Lys Phe Leu
      1300                      1305                      1310
Gln Thr Ile Val Lys Ala Glu Gly Lys Phe Ile Lys Lys Cys Gln Asp
      1315                      1320                      1325
Met Val Met Ala Glu Leu Val Asn Ser Gly Glu Asp Val Leu Val Phe
      1330                      1335                      1340
Tyr Asn Asp Arg Ala Ser Phe Gln Thr Leu Ile Gln Met Met Arg Ser
1345                      1350                      1355                      1360
Glu Arg Asp Arg Met Asp Glu Asn Ser Pro Leu Phe Met Tyr His Ile
      1365                      1370                      1375
His Leu Val Glu Leu Leu Ala Val Cys Thr Glu Gly Lys Asn Val Tyr
      1380                      1385                      1390
Thr Glu Ile Lys Cys Asn Ser Leu Leu Pro Leu Asp Asp Ile Val Arg
      1395                      1400                      1405
Val Val Thr His Glu Asp Cys Ile Pro Glu Val Lys Ile Ala Tyr Ile
      1410                      1415                      1420
Asn Phe Leu Asn His Cys Tyr Val Asp Thr Glu Val Glu Met Lys Glu
1425                      1430                      1435                      1440
Ile Tyr Thr Ser Asn His Met Trp Lys Leu Phe Glu Asn Phe Leu Val
      1445                      1450                      1455
Asp Ile Cys Arg Ala Cys Asn Asn Thr Ser Asp Arg Lys His Ala Asp
      1460                      1465                      1470
Ser Val Leu Glu Lys Tyr Val Thr Glu Ile Val Met Ser Ile Val Thr
      1475                      1480                      1485
Thr Phe Phe Ser Ser Pro Phe Ser Asp Gln Ser Thr Thr Leu Gln Thr
      1490                      1495                      1500
Arg Gln Pro Val Phe Val Gln Leu Leu Gln Gly Val Phe Arg Val Tyr
1505                      1510                      1515                      1520

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His Cys Asn Trp Leu Met Pro Ser Gln Lys Ala Ser Val Glu Ser Cys  
 1525 1530 1535  
 Ile Arg Val Leu Ser Asp Val Ala Lys Ser Arg Ala Ile Ala Ile Pro  
 1540 1545 1550  
 Val Asp Leu Asp Ser Gln Val Asn Asn Leu Phe Leu Lys Ser His Asn  
 1555 1560 1565  
 Ile Val Gln Lys Thr Ala Met Asn Trp Arg Leu Ser Ala Arg Asn Ala  
 1570 1575 1580  
 Ala Arg Arg Asp Ser Val Leu Ala Ala Ser Arg Asp Tyr Arg Asn Ile  
 1585 1590 1595 1600  
 Ile Glu Arg Leu Gln Asp Ile Val Ser Ala Leu Glu Asp Arg Leu Arg  
 1605 1610 1615  
 Pro Leu Val Gln Ala Glu Leu Ser Val Leu Val Asp Val Leu His Arg  
 1620 1625 1630  
 Pro Glu Leu Leu Phe Pro Glu Asn Thr Asp Ala Arg Arg Lys Cys Glu  
 1635 1640 1645  
 Ser Gly Gly Phe Ile Cys Lys Leu Ile Lys His Thr Lys Gln Leu Leu  
 1650 1655 1660  
 Glu Glu Asn Glu Glu Lys Leu Cys Ile Lys Val Leu Gln Thr Leu Arg  
 1665 1670 1675 1680  
 Glu Met Met Thr Lys Asp Arg Gly Tyr Gly Glu Lys Gly Glu Ala Leu  
 1685 1690 1695  
 Arg Gln Ile Leu Val Asn Arg Tyr Tyr Gly Asn Ile Arg Pro Ser Gly  
 1700 1705 1710  
 Arg Arg Glu Ser Leu Thr Ser Phe Gly Asn Gly Pro Leu Ser Pro Gly  
 1715 1720 1725  
 Gly Pro Ser Lys Pro Gly Gly Gly Gly Gly Pro Gly Ser Gly Ser  
 1730 1735 1740  
 Thr Ser Arg Gly Glu Met Ser Leu Ala Glu Val Gln Cys His Leu Asp  
 1745 1750 1755 1760  
 Lys Glu Gly Ala Ser Asn Leu Val Ile Asp Leu Ile Met Asn Ala Ser  
 1765 1770 1775  
 Ser Asp Arg Val Phe His Glu Ser Ile Leu Leu Ala Ile Ala Leu Leu  
 1780 1785 1790  
 Glu Gly Gly Asn Thr Thr Ile Gln His Ser Phe Phe Cys Arg Leu Thr  
 1795 1800 1805  
 Glu Asp Lys Lys Ser Glu Lys Phe Phe Lys Val Phe Tyr Asp Arg Met  
 1810 1815 1820  
 Lys Val Ala Gln Gln Glu Ile Lys Ala Thr Val Thr Val Asn Thr Ser  
 1825 1830 1835 1840  
 Asp Leu Gly Asn Lys Lys Lys Asp Asp Glu Val Asp Arg Asp Ala Pro  
 1845 1850 1855  
 Ser Arg Lys Lys Ala Lys Glu Pro Thr Thr Gln Ile Thr Glu Glu Val  
 1860 1865 1870  
 Arg Asp Gln Leu Leu Glu Ala Ser Ala Ala Thr Arg Lys Ala Phe Thr  
 1875 1880 1885  
 Thr Phe Arg Arg Glu Ala Asp Pro Asp Asp His Tyr Gln Ser Gly Glu  
 1890 1895 1900  
 Gly Thr Gln Ala Thr Thr Asp Lys Ala Lys Asp Asp Leu Glu Met Ser  
 1905 1910 1915 1920  
 Ala Val Ile Thr Ile Met Gln Pro Ile Leu Arg Phe Leu Gln Leu Leu  
 1925 1930 1935  
 Cys Glu Asn His Asn Arg Asp Leu Gln Asn Phe Leu Arg Cys Gln Asn  
 1940 1945 1950  
 Asn Lys Thr Asn Tyr Asn Leu Val Cys Glu Thr Leu Gln Phe Leu Asp  
 1955 1960 1965  
 Cys Ile Cys Gly Ser Thr Thr Gly Gly Leu Gly Leu Leu Gly Leu Tyr  
 1970 1975 1980  
 Ile Asn Glu Lys Asn Val Ala Leu Ile Asn Gln Thr Leu Glu Ser Leu  
 1985 1990 1995 2000

Thr Glu Tyr Cys Gln Gly Pro Cys His Glu Asn Gln Asn Cys Ile Ala  
 2005 2010 2015  
 Thr His Glu Ser Asn Gly Ile Asp Ile Ile Thr Ala Leu Ile Leu Asn  
 2020 2025 2030  
 Asp Ile Asn Pro Leu Gly Lys Lys Arg Met Asp Leu Val Leu Glu Leu  
 2035 2040 2045  
 Lys Asn Asn Ala Ser Lys Leu Leu Leu Ala Ile Met Glu Ser Arg His  
 2050 2055 2060  
 Asp Ser Glu Asn Ala Glu Arg Ile Leu Tyr Asn Met Arg Pro Lys Glu  
 2065 2070 2075 2080  
 Leu Val Glu Val Ile Lys Lys Ala Tyr Met Gln Gly Glu Val Glu Phe  
 2085 2090 2095  
 Glu Asp Gly Glu Asn Gly Glu Asp Gly Ala Ala Ser Pro Arg Asn Val  
 2100 2105 2110  
 Gly His Asn Ile Tyr Ile Leu Ala His Gln Leu Ala Arg His Asn Lys  
 2115 2120 2125  
 Glu Leu Gln Thr Met Leu Lys Pro Gly Gly Gln Val Asp Gly Asp Glu  
 2130 2135 2140  
 Ala Leu Glu Phe Tyr Ala Lys His Thr Ala Gln Ile Glu Ile Val Arg  
 2145 2150 2155 2160  
 Leu Asp Arg Thr Met Glu Gln Ile Val Phe Pro Val Pro Ser Ile Cys  
 2165 2170 2175  
 Glu Phe Leu Thr Lys Glu Ser Lys Leu Arg Ile Tyr Tyr Thr Thr Glu  
 2180 2185 2190  
 Arg Asp Glu Gln Gly Ser Lys Ile Asn Asp Phe Phe Leu Arg Ser Glu  
 2195 2200 2205  
 Asp Leu Phe Asn Glu Met Asn Trp Gln Lys Lys Leu Arg Ala Gln Pro  
 2210 2215 2220  
 Val Leu Tyr Trp Cys Ala Arg Asn Met Ser Phe Trp Ser Ser Ile Ser  
 2225 2230 2235 2240  
 Phe Asn Leu Ala Val Leu Met Asn Leu Leu Val Ala Phe Phe Tyr Pro  
 2245 2250 2255  
 Phe Lys Gly Val Arg Gly Gly Thr Leu Glu Pro His Trp Ser Gly Leu  
 2260 2265 2270  
 Leu Trp Thr Ala Met Leu Ile Ser Leu Ala Ile Val Ile Ala Leu Pro  
 2275 2280 2285  
 Lys Pro His Gly Ile Arg Ala Leu Ile Ala Ser Thr Ile Leu Arg Leu  
 2290 2295 2300  
 Ile Phe Ser Val Gly Leu Gln Pro Thr Leu Phe Leu Leu Gly Ala Phe  
 2305 2310 2315 2320  
 Asn Val Cys Asn Lys Ile Ile Phe Leu Met Ser Phe Val Gly Asn Cys  
 2325 2330 2335  
 Gly Thr Phe Thr Arg Gly Tyr Arg Ala Met Val Leu Asp Val Glu Phe  
 2340 2345 2350  
 Leu Tyr His Leu Leu Tyr Leu Leu Ile Cys Ala Met Gly Leu Phe Val  
 2355 2360 2365  
 His Glu Phe Phe Tyr Ser Leu Leu Leu Phe Asp Leu Val Tyr Arg Glu  
 2370 2375 2380  
 Glu Thr Leu Leu Asn Val Ile Lys Ser Val Thr Arg Asn Gly Arg Pro  
 2385 2390 2395 2400  
 Ile Ile Leu Thr Ala Ala Leu Ala Leu Ile Leu Val Tyr Leu Phe Ser  
 2405 2410 2415  
 Ile Val Gly Tyr Leu Phe Phe Lys Asp Asp Phe Ile Leu Glu Val Asp  
 2420 2425 2430  
 Arg Leu Pro Asn Glu Thr Ala Gly Pro Glu Thr Gly Glu Ser Leu Ala  
 2435 2440 2445  
 Asn Asp Phe Leu Tyr Ser Asp Val Cys Arg Val Glu Thr Gly Glu Asn  
 2450 2455 2460  
 Cys Thr Ser Pro Ala Pro Lys Glu Glu Leu Leu Pro Val Glu Glu Thr  
 2465 2470 2475 2480

Glu Gln Asp Lys Glu His Thr Cys Glu Thr Leu Leu Met Cys Ile Val  
 2485 2490 2495  
 Thr Val Leu Ser His Gly Leu Arg Ser Gly Gly Gly Val Gly Asp Val  
 2500 2505 2510  
 Leu Arg Lys Pro Ser Lys Glu Glu Pro Leu Phe Ala Ala Arg Val Ile  
 2515 2520 2525  
 Tyr Asp Leu Leu Phe Phe Phe Met Val Ile Ile Ile Val Leu Asn Leu  
 2530 2535 2540  
 Ile Phe Gly Val Ile Ile Asp Thr Phe Ala Asp Leu Arg Ser Glu Lys  
 2545 2550 2555 2560  
 Gln Lys Lys Glu Glu Ile Leu Lys Thr Thr Cys Phe Ile Cys Gly Leu  
 2565 2570 2575  
 Glu Arg Asp Lys Phe Asp Asn Lys Thr Val Thr Phe Glu Glu His Ile  
 2580 2585 2590  
 Lys Glu Glu His Asn Met Trp His Tyr Leu Cys Phe Ile Val Leu Val  
 2595 2600 2605  
 Lys Val Lys Asp Ser Thr Glu Tyr Thr Gly Pro Glu Ser Tyr Val Ala  
 2610 2615 2620  
 Glu Met Ile Arg Glu Arg Asn Leu Asp Trp Phe Pro Arg Met Arg Ala  
 2625 2630 2635 2640  
 Met Ser Leu Val Ser Ser Asp Ser Glu Gly Glu Gln Asn Glu Leu Arg  
 2645 2650 2655  
 Asn Leu Gln Glu Lys Leu Glu Ser Thr Met Lys Leu Val Thr Asn Leu  
 2660 2665 2670  
 Ser Gly Gln Leu Ser Glu Leu Lys Asp Gln Met Thr Glu Gln Arg Lys  
 2675 2680 2685  
 Gln Lys Gln Arg Ile Gly Leu Leu Gly His Pro Pro His Met Asn Val  
 2690 2695 2700  
 Asn Pro Gln Gln Pro Ala  
 2705 2710

&lt;210&gt; 18

&lt;211&gt; 2749

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence:/note =  
 synthetic construct

&lt;400&gt; 18

Met Ser Asp Lys Met Ser Ser Phe Leu His Ile Gly Asp Ile Cys Ser  
 1 5 10 15  
 Leu Tyr Ala Glu Gly Ser Thr Asn Gly Phe Ile Ser Thr Leu Gly Leu  
 20 25 30  
 Val Asp Asp Arg Cys Val Val Gln Pro Glu Ala Gly Asp Leu Asn Asn  
 35 40 45  
 Pro Pro Lys Lys Phe Arg Asp Cys Leu Phe Lys Leu Cys Pro Met Asn  
 50 55 60  
 Arg Tyr Ser Ala Gln Lys Gln Phe Trp Lys Ala Ala Lys Pro Gly Ala  
 65 70 75 80  
 Asn Ser Thr Thr Asp Ala Val Leu Leu Asn Lys Leu His His Ala Ala  
 85 90 95  
 Asp Leu Glu Lys Lys Gln Asn Glu Thr Glu Asn Arg Lys Leu Leu Gly  
 100 105 110  
 Thr Val Ile Gln Tyr Gly Asn Val Ile Gln Leu Leu His Leu Lys Ser  
 115 120 125  
 Asn Lys Tyr Leu Thr Val Asn Lys Arg Leu Pro Ala Leu Leu Glu Lys  
 130 135 140

Asn	Ala	Met	Arg	Val	Thr	Leu	Asp	Glu	Ala	Gly	Asn	Glu	Gly	Ser	Trp
145					150					155					160
Phe	Tyr	Ile	Gln	Pro	Phe	Tyr	Lys	Leu	Arg	Ser	Ile	Gly	Asp	Ser	Val
			165						170					175	
Val	Ile	Gly	Asp	Lys	Val	Val	Leu	Asn	Pro	Val	Asn	Ala	Gly	Gln	Pro
			180					185					190		
Leu	His	Ala	Ser	Ser	His	Gln	Leu	Val	Asp	Asn	Pro	Gly	Cys	Asn	Glu
		195					200					205			
Val	Asn	Ser	Val	Asn	Cys	Asn	Thr	Ser	Trp	Lys	Ile	Val	Leu	Phe	Met
	210					215					220				
Lys	Trp	Ser	Asp	Asn	Lys	Asp	Asp	Ile	Leu	Lys	Gly	Gly	Asp	Val	Val
225					230					235					240
Arg	Leu	Phe	His	Ala	Glu	Gln	Glu	Lys	Phe	Leu	Thr	Cys	Asp	Glu	His
			245						250					255	
Arg	Lys	Lys	Gln	His	Val	Phe	Leu	Arg	Thr	Thr	Gly	Arg	Gln	Ser	Ala
			260					265					270		
Thr	Ser	Ala	Thr	Ser	Ser	Lys	Ala	Leu	Trp	Glu	Val	Glu	Val	Val	Gln
	275						280					285			
His	Asp	Pro	Cys	Arg	Gly	Gly	Ala	Gly	Tyr	Trp	Asn	Ser	Leu	Phe	Arg
	290					295					300				
Phe	Lys	His	Leu	Ala	Thr	Gly	His	Tyr	Leu	Ala	Ala	Glu	Val	Asp	Pro
305					310					315					320
Asp	Phe	Glu	Glu	Glu	Cys	Leu	Glu	Phe	Gln	Pro	Ser	Val	Asp	Pro	Asp
			325						330					335	
Gln	Asp	Ala	Ser	Arg	Ser	Arg	Leu	Arg	Asn	Ala	Gln	Glu	Lys	Met	Val
		340						345					350		
Tyr	Ser	Leu	Val	Ser	Val	Pro	Glu	Gly	Asn	Asp	Ile	Ser	Ser	Ile	Phe
	355						360					365			
Glu	Leu	Asp	Pro	Thr	Thr	Leu	Arg	Gly	Gly	Asp	Ser	Leu	Val	Pro	Arg
	370					375					380				
Asn	Ser	Tyr	Val	Arg	Leu	Arg	His	Leu	Cys	Thr	Asn	Thr	Trp	Val	His
385					390					395					400
Ser	Thr	Asn	Ile	Pro	Ile	Asp	Lys	Glu	Glu	Glu	Lys	Pro	Val	Met	Leu
			405						410					415	
Lys	Ile	Gly	Thr	Ser	Pro	Leu	Lys	Glu	Asp	Lys	Glu	Ala	Phe	Ala	Ile
		420						425					430		
Val	Pro	Val	Ser	Pro	Ala	Glu	Val	Arg	Asp	Leu	Asp	Phe	Ala	Asn	Asp
	435						440					445			
Ala	Ser	Lys	Val	Leu	Gly	Ser	Ile	Ala	Gly	Lys	Leu	Glu	Lys	Gly	Thr
	450					455					460				
Ile	Thr	Gln	Asn	Glu	Arg	Arg	Ser	Val	Thr	Lys	Leu	Leu	Glu	Asp	Leu
465					470					475					480
Val	Tyr	Phe	Val	Thr	Gly	Gly	Thr	Asn	Ser	Gly	Gln	Asp	Val	Leu	Glu
			485						490					495	
Val	Val	Phe	Ser	Lys	Pro	Asn	Arg	Glu	Arg	Gln	Lys	Leu	Met	Arg	Glu
		500						505					510		
Gln	Asn	Ile	Leu	Lys	Gln	Ile	Phe	Lys	Leu	Leu	Gln	Ala	Pro	Phe	Thr
		515					520					525			
Asp	Cys	Gly	Asp	Gly	Pro	Met	Leu	Arg	Leu	Glu	Glu	Leu	Gly	Asp	Gln
	530					535					540				
Arg	His	Ala	Pro	Phe	Arg	His	Ile	Cys	Arg	Leu	Cys	Tyr	Arg	Val	Leu
545					550					555					560
Arg	His	Ser	Gln	Gln	Asp	Tyr	Arg	Lys	Asn	Gln	Glu	Tyr	Ile	Ala	Lys
			565						570					575	
Gln	Phe	Gly	Phe	Met	Gln	Lys	Gln	Ile	Gly	Tyr	Asp	Val	Leu	Ala	Glu
		580						585					590		
Asp	Thr	Ile	Thr	Ala	Leu	Leu	His	Asn	Asn	Arg	Lys	Leu	Leu	Glu	Lys
	595						600					605			
His	Ile	Thr	Ala	Ala	Glu	Ile	Asp	Thr	Phe	Val	Ser	Leu	Val	Arg	Lys
	610						615					620			

Asn	Arg	Glu	Pro	Arg	Phe	Leu	Asp	Tyr	Leu	Ser	Asp	Leu	Cys	Val	Ser	625	630	635	640
Met	Asn	Lys	Ser	Ile	Pro	Val	Thr	Gln	Glu	Leu	Ile	Cys	Lys	Ala	Val	645	650	655	
Leu	Asn	Pro	Thr	Asn	Ala	Asp	Ile	Leu	Ile	Glu	Thr	Lys	Leu	Val	Leu	660	665	670	
Ser	Arg	Phe	Glu	Phe	Glu	Gly	Val	Ser	Thr	Gly	Glu	Asn	Ala	Leu	Glu	675	680	685	
Ala	Gly	Glu	Asp	Glu	Glu	Glu	Val	Trp	Leu	Phe	Trp	Arg	Asp	Ser	Asn	690	695	700	
Lys	Glu	Ile	Arg	Ser	Lys	Ser	Val	Arg	Glu	Leu	Ala	Gln	Asp	Ala	Lys	705	710	715	720
Glu	Gly	Gln	Lys	Glu	Asp	Arg	Asp	Val	Leu	Ser	Tyr	Tyr	Arg	Tyr	Gln	725	730	735	
Leu	Asn	Leu	Phe	Ala	Arg	Met	Cys	Leu	Asp	Arg	Gln	Tyr	Leu	Ala	Ile	740	745	750	
Asn	Glu	Ile	Ser	Gly	Gln	Leu	Asp	Val	Asp	Leu	Ile	Leu	Arg	Cys	Met	755	760	765	
Ser	Asp	Glu	Asn	Leu	Pro	Tyr	Asp	Leu	Arg	Ala	Ser	Phe	Cys	Arg	Leu	770	775	780	
Met	Leu	His	Met	His	Val	Asp	Arg	Asp	Pro	Gln	Glu	Gln	Val	Thr	Pro	785	790	795	800
Val	Lys	Tyr	Ala	Arg	Leu	Trp	Ser	Glu	Ile	Pro	Ser	Glu	Ile	Ala	Ile	805	810	815	
Asp	Asp	Tyr	Asp	Ser	Ser	Gly	Ala	Ser	Lys	Asp	Glu	Ile	Lys	Glu	Arg	820	825	830	
Phe	Ala	Gln	Thr	Met	Glu	Phe	Val	Glu	Glu	Tyr	Leu	Arg	Asp	Val	Val	835	840	845	
Cys	Gln	Arg	Phe	Pro	Phe	Ser	Asp	Lys	Glu	Lys	Asn	Lys	Leu	Thr	Phe	850	855	860	
Glu	Val	Val	Asn	Leu	Ala	Arg	Asn	Leu	Ile	Tyr	Phe	Gly	Phe	Tyr	Asn	865	870	875	880
Phe	Ser	Asp	Leu	Leu	Arg	Leu	Thr	Lys	Ile	Leu	Leu	Ala	Ile	Leu	Asp	885	890	895	
Cys	Val	His	Val	Thr	Thr	Ile	Phe	Pro	Ile	Ser	Lys	Met	Thr	Lys	Gly	900	905	910	
Glu	Glu	Asn	Lys	Gly	Ser	Asn	Val	Met	Arg	Ser	Ile	His	Gly	Val	Gly	915	920	925	
Glu	Leu	Met	Thr	Gln	Val	Val	Leu	Arg	Gly	Gly	Gly	Phe	Leu	Pro	Met	930	935	940	
Thr	Pro	Met	Ala	Ala	Ala	Pro	Glu	Gly	Asn	Val	Lys	Gln	Ala	Glu	Pro	945	950	955	960
Glu	Lys	Glu	Asp	Ile	Met	Val	Met	Asp	Thr	Lys	Leu	Lys	Ile	Ile	Glu	965	970	975	
Ile	Leu	Gln	Phe	Ile	Leu	Asn	Val	Arg	Leu	Asp	Tyr	Arg	Ile	Ser	Cys	980	985	990	
Leu	Leu	Cys	Ile	Phe	Lys	Arg	Glu	Phe	Asp	Glu	Ser	Asn	Ser	Gln	Ser	995	1000	1005	
Ser	Glu	Thr	Ser	Ser	Gly	Asn	Ser	Ser	Gln	Glu	Gly	Pro	Ser	Asn	Val	1010	1015	1020	
Pro	Gly	Ala	Leu	Asp	Phe	Glu	His	Ile	Glu	Glu	Gln	Ala	Glu	Gly	Ile	1025	1030	1035	1040
Phe	Gly	Gly	Ser	Glu	Glu	Asn	Thr	Pro	Leu	Asp	Leu	Asp	Asp	His	Gly	1045	1050	1055	
Gly	Arg	Thr	Phe	Leu	Arg	Val	Leu	Leu	His	Leu	Thr	Met	His	Asp	Tyr	1060	1065	1070	
Pro	Pro	Leu	Val	Ser	Gly	Ala	Leu	Gln	Leu	Leu	Phe	Arg	His	Phe	Ser	1075	1080	1085	
Gln	Arg	Gln	Glu	Val	Leu	Gln	Ala	Phe	Lys	Gln	Val	Gln	Leu	Leu	Val	1090	1095	1100	

Thr Ser Gln Asp Val Asp Asn Tyr Lys Gln Ile Lys Gln Asp Leu Asp  
 1105 1110 1115 1120  
 Gln Leu Arg Ser Ile Val Glu Lys Ser Glu Leu Trp Val Tyr Lys Gly  
 1125 1130 1135  
 Gln Gly Pro Asp Glu Pro Met Asp Gly Ala Ser Gly Glu Asn Glu His  
 1140 1145 1150  
 Lys Lys Thr Glu Glu Gly Thr Ser Lys Pro Leu Lys His Glu Ser Thr  
 1155 1160 1165  
 Ser Ser Tyr Asn Tyr Arg Val Val Lys Glu Ile Leu Ile Arg Leu Ser  
 1170 1175 1180  
 Lys Leu Cys Val Gln Glu Ser Ala Ser Val Arg Lys Ser Arg Lys Gln  
 1185 1190 1195 1200  
 Gln Gln Arg Leu Leu Arg Asn Met Gly Ala His Ala Val Val Leu Glu  
 1205 1210 1215  
 Leu Leu Gln Ile Pro Tyr Glu Lys Ala Glu Asp Thr Lys Met Gln Glu  
 1220 1225 1230  
 Ile Met Arg Leu Ala His Glu Phe Leu Gln Asn Phe Cys Ala Gly Asn  
 1235 1240 1245  
 Gln Gln Asn Gln Ala Leu Leu His Lys His Ile Asn Leu Phe Leu Asn  
 1250 1255 1260  
 Pro Gly Ile Leu Glu Ala Val Thr Met Gln His Ile Phe Met Asn Asn  
 1265 1270 1275 1280  
 Phe Gln Leu Cys Ser Glu Ile Asn Glu Arg Val Val Gln His Phe Val  
 1285 1290 1295  
 His Cys Ile Glu Thr His Gly Arg Asn Val Gln Tyr Ile Lys Phe Leu  
 1300 1305 1310  
 Gln Thr Ile Val Lys Ala Glu Gly Lys Phe Ile Lys Lys Cys Gln Asp  
 1315 1320 1325  
 Met Val Met Ala Glu Leu Val Asn Ser Gly Glu Asp Val Leu Val Phe  
 1330 1335 1340  
 Tyr Asn Asp Arg Ala Ser Phe Gln Thr Leu Ile Gln Met Met Arg Ser  
 1345 1350 1355 1360  
 Glu Arg Asp Arg Met Asp Glu Asn Ser Pro Leu Phe Met Tyr His Ile  
 1365 1370 1375  
 His Leu Val Glu Leu Leu Ala Val Cys Thr Glu Gly Lys Asn Val Tyr  
 1380 1385 1390  
 Thr Glu Ile Lys Cys Asn Ser Leu Leu Pro Leu Asp Asp Ile Val Arg  
 1395 1400 1405  
 Val Val Thr His Glu Asp Cys Ile Pro Glu Val Lys Ile Ala Tyr Ile  
 1410 1415 1420  
 Asn Phe Leu Asn His Cys Tyr Val Asp Thr Glu Val Glu Met Lys Glu  
 1425 1430 1435 1440  
 Ile Tyr Thr Ser Asn His Met Trp Lys Leu Phe Glu Asn Phe Leu Val  
 1445 1450 1455  
 Asp Ile Cys Arg Ala Cys Asn Asn Thr Ser Asp Arg Lys His Ala Asp  
 1460 1465 1470  
 Ser Val Leu Glu Lys Tyr Val Thr Glu Ile Val Met Ser Ile Val Thr  
 1475 1480 1485  
 Thr Phe Phe Ser Ser Pro Phe Ser Asp Gln Ser Thr Thr Leu Gln Thr  
 1490 1495 1500  
 Arg Gln Pro Val Phe Val Gln Leu Leu Gln Gly Val Phe Arg Val Tyr  
 1505 1510 1515 1520  
 His Cys Asn Trp Leu Met Pro Ser Gln Lys Ala Ser Val Glu Ser Cys  
 1525 1530 1535  
 Ile Arg Val Leu Ser Asp Val Ala Lys Ser Arg Ala Ile Ala Ile Pro  
 1540 1545 1550  
 Val Asp Leu Asp Ser Gln Val Asn Asn Leu Phe Leu Lys Ser His Asn  
 1555 1560 1565  
 Ile Val Gln Lys Thr Ala Met Asn Trp Arg Leu Ser Ala Arg Asn Ala  
 1570 1575 1580



Ala Arg Arg Asp Ser Val Leu Ala Ala Ser Arg Asp Tyr Arg Asn Ile  
 1585 1590 1595 1600  
 Ile Glu Arg Leu Gln Asp Ile Val Ser Ala Leu Glu Asp Arg Leu Arg  
 1605 1610 1615  
 Pro Leu Val Gln Ala Glu Leu Ser Val Leu Val Asp Val Leu His Arg  
 1620 1625 1630  
 Pro Glu Leu Leu Phe Pro Glu Asn Thr Asp Ala Arg Arg Lys Cys Glu  
 1635 1640 1645  
 Ser Gly Gly Phe Ile Cys Lys Leu Ile Lys His Thr Lys Gln Leu Leu  
 1650 1655 1660  
 Glu Glu Asn Glu Glu Lys Leu Cys Ile Lys Val Leu Gln Thr Leu Arg  
 1665 1670 1675 1680  
 Glu Met Met Thr Lys Asp Arg Gly Tyr Gly Glu Lys Gln Ile Ser Ile  
 1685 1690 1695  
 Asp Glu Leu Glu Asn Ala Glu Leu Pro Gln Pro Pro Glu Ala Glu Asn  
 1700 1705 1710  
 Ser Thr Glu Glu Leu Glu Pro Ser Pro Pro Leu Arg Gln Leu Glu Asp  
 1715 1720 1725  
 His Lys Arg Gly Glu Ala Leu Arg Gln Ile Leu Val Asn Arg Tyr Tyr  
 1730 1735 1740  
 Gly Asn Ile Arg Pro Ser Gly Arg Arg Glu Ser Leu Thr Ser Phe Gly  
 1745 1750 1755 1760  
 Asn Gly Pro Leu Ser Pro Gly Gly Pro Ser Lys Pro Gly Gly Gly Gly  
 1765 1770 1775  
 Gly Gly Pro Gly Ser Gly Ser Thr Ser Arg Gly Glu Met Ser Leu Ala  
 1780 1785 1790  
 Glu Val Gln Cys His Leu Asp Lys Glu Gly Ala Ser Asn Leu Val Ile  
 1795 1800 1805  
 Asp Leu Ile Met Asn Ala Ser Ser Asp Arg Val Phe His Glu Ser Ile  
 1810 1815 1820  
 Leu Leu Ala Ile Ala Leu Leu Glu Gly Gly Asn Thr Thr Ile Gln His  
 1825 1830 1835 1840  
 Ser Phe Phe Cys Arg Leu Thr Glu Asp Lys Lys Ser Glu Lys Phe Phe  
 1845 1850 1855  
 Lys Val Phe Tyr Asp Arg Met Lys Val Ala Gln Gln Glu Ile Lys Ala  
 1860 1865 1870  
 Thr Val Thr Val Asn Thr Ser Asp Leu Gly Asn Lys Lys Lys Asp Asp  
 1875 1880 1885  
 Glu Val Asp Arg Asp Ala Pro Ser Arg Lys Lys Ala Lys Glu Pro Thr  
 1890 1895 1900  
 Thr Gln Ile Thr Glu Glu Val Arg Asp Gln Leu Leu Glu Ala Ser Ala  
 1905 1910 1915 1920  
 Ala Thr Arg Lys Ala Phe Thr Thr Phe Arg Arg Glu Ala Asp Pro Asp  
 1925 1930 1935  
 Asp His Tyr Gln Ser Gly Glu Gly Thr Gln Ala Thr Thr Asp Lys Ala  
 1940 1945 1950  
 Lys Asp Asp Leu Glu Met Ser Ala Val Ile Thr Ile Met Gln Pro Ile  
 1955 1960 1965  
 Leu Arg Phe Leu Gln Leu Leu Cys Glu Asn His Asn Arg Asp Leu Gln  
 1970 1975 1980  
 Asn Phe Leu Arg Cys Gln Asn Asn Lys Thr Asn Tyr Asn Leu Val Cys  
 1985 1990 1995 2000  
 Glu Thr Leu Gln Phe Leu Asp Cys Ile Cys Gly Ser Thr Thr Gly Gly  
 2005 2010 2015  
 Leu Gly Leu Leu Gly Leu Tyr Ile Asn Glu Lys Asn Val Ala Leu Ile  
 2020 2025 2030  
 Asn Gln Thr Leu Glu Ser Leu Thr Glu Tyr Cys Gln Gly Pro Cys His  
 2035 2040 2045  
 Glu Asn Gln Asn Cys Ile Ala Thr His Glu Ser Asn Gly Ile Asp Ile  
 2050 2055 2060

Ile Thr Ala Leu Ile Leu Asn Asp Ile Asn Pro Leu Gly Lys Lys Arg  
 2065 2070 2075 2080  
 Met Asp Leu Val Leu Glu Leu Lys Asn Asn Ala Ser Lys Leu Leu Leu  
 2085 2090 2095  
 Ala Ile Met Glu Ser Arg His Asp Ser Glu Asn Ala Glu Arg Ile Leu  
 2100 2105 2110  
 Tyr Asn Met Arg Pro Lys Glu Leu Val Glu Val Ile Lys Lys Ala Tyr  
 2115 2120 2125  
 Met Gln Gly Glu Val Glu Phe Glu Asp Gly Glu Asn Gly Glu Asp Gly  
 2130 2135 2140  
 Ala Ala Ser Pro Arg Asn Val Gly His Asn Ile Tyr Ile Leu Ala His  
 2145 2150 2155 2160  
 Gln Leu Ala Arg His Asn Lys Glu Leu Gln Thr Met Leu Lys Pro Gly  
 2165 2170 2175  
 Gly Gln Val Asp Gly Asp Glu Ala Leu Glu Phe Tyr Ala Lys His Thr  
 2180 2185 2190  
 Ala Gln Ile Glu Ile Val Arg Leu Asp Arg Thr Met Glu Gln Ile Val  
 2195 2200 2205  
 Phe Pro Val Pro Ser Ile Cys Glu Phe Leu Thr Lys Glu Ser Lys Leu  
 2210 2215 2220  
 Arg Ile Tyr Tyr Thr Thr Glu Arg Asp Glu Gln Gly Ser Lys Ile Asn  
 2225 2230 2235 2240  
 Asp Phe Phe Leu Arg Ser Glu Asp Leu Phe Asn Glu Met Asn Trp Gln  
 2245 2250 2255  
 Lys Lys Leu Arg Ala Gln Pro Val Leu Tyr Trp Cys Ala Arg Asn Met  
 2260 2265 2270  
 Ser Phe Trp Ser Ser Ile Ser Phe Asn Leu Ala Val Leu Met Asn Leu  
 2275 2280 2285  
 Leu Val Ala Phe Phe Tyr Pro Phe Lys Gly Val Arg Gly Gly Thr Leu  
 2290 2295 2300  
 Glu Pro His Trp Ser Gly Leu Leu Trp Thr Ala Met Leu Ile Ser Leu  
 2305 2310 2315 2320  
 Ala Ile Val Ile Ala Leu Pro Lys Pro His Gly Ile Arg Ala Leu Ile  
 2325 2330 2335  
 Ala Ser Thr Ile Leu Arg Leu Ile Phe Ser Val Gly Leu Gln Pro Thr  
 2340 2345 2350  
 Leu Phe Leu Leu Gly Ala Phe Asn Val Cys Asn Lys Ile Ile Phe Leu  
 2355 2360 2365  
 Met Ser Phe Val Gly Asn Cys Gly Thr Phe Thr Arg Gly Tyr Arg Ala  
 2370 2375 2380  
 Met Val Leu Asp Val Glu Phe Leu Tyr His Leu Leu Tyr Leu Leu Ile  
 2385 2390 2395 2400  
 Cys Ala Met Gly Leu Phe Val His Glu Phe Phe Tyr Ser Leu Leu Leu  
 2405 2410 2415  
 Phe Asp Leu Val Tyr Arg Glu Glu Thr Leu Leu Asn Val Ile Lys Ser  
 2420 2425 2430  
 Val Thr Arg Asn Gly Arg Pro Ile Ile Leu Thr Ala Ala Leu Ala Leu  
 2435 2440 2445  
 Ile Leu Val Tyr Leu Phe Ser Ile Val Gly Tyr Leu Phe Phe Lys Asp  
 2450 2455 2460  
 Asp Phe Ile Leu Glu Val Asp Arg Leu Pro Asn Glu Thr Ala Gly Pro  
 2465 2470 2475 2480  
 Glu Thr Gly Glu Ser Leu Ala Asn Asp Phe Leu Tyr Ser Asp Val Cys  
 2485 2490 2495  
 Arg Val Glu Thr Gly Glu Asn Cys Thr Ser Pro Ala Pro Lys Glu Glu  
 2500 2505 2510  
 Leu Leu Pro Val Glu Glu Thr Glu Gln Asp Lys Glu His Thr Cys Glu  
 2515 2520 2525  
 Thr Leu Leu Met Cys Ile Val Thr Val Leu Ser His Gly Leu Arg Ser  
 2530 2535 2540

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Gly Gly Gly Val Gly Asp Val Leu Arg Lys Pro Ser Lys Glu Glu Pro
2545                2550                2555                2560
Leu Phe Ala Ala Arg Val Ile Tyr Asp Leu Leu Phe Phe Phe Met Val
                2565                2570                2575
Ile Ile Ile Val Leu Asn Leu Ile Phe Gly Val Ile Ile Asp Thr Phe
                2580                2585                2590
Ala Asp Leu Arg Ser Glu Lys Gln Lys Lys Glu Glu Ile Leu Lys Thr
                2595                2600                2605
Thr Cys Phe Ile Cys Gly Leu Glu Arg Asp Lys Phe Asp Asn Lys Thr
                2610                2615                2620
Val Thr Phe Glu Glu His Ile Lys Glu Glu His Asn Met Trp His Tyr
2625                2630                2635                2640
Leu Cys Phe Ile Val Leu Val Lys Val Lys Asp Ser Thr Glu Tyr Thr
                2645                2650                2655
Gly Pro Glu Ser Tyr Val Ala Glu Met Ile Arg Glu Arg Asn Leu Asp
                2660                2665                2670
Trp Phe Pro Arg Met Arg Ala Met Ser Leu Val Ser Ser Asp Ser Glu
                2675                2680                2685
Gly Glu Gln Asn Glu Leu Arg Asn Leu Gln Glu Lys Leu Glu Ser Thr
                2690                2695                2700
Met Lys Leu Val Thr Asn Leu Ser Gly Gln Leu Ser Glu Leu Lys Asp
2705                2710                2715                2720
Gln Met Thr Glu Gln Arg Lys Gln Lys Gln Arg Ile Gly Leu Leu Gly
                2725                2730                2735
His Pro Pro His Met Asn Val Asn Pro Gln Gln Pro Ala
                2740                2745

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&lt;210&gt; 19

&lt;211&gt; 2701

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence:/note =  
synthetic construct

&lt;400&gt; 19

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Met Ser Asp Lys Met Ser Ser Phe Leu Tyr Ile Gly Asp Ile Val Ser
 1          5          10          15
Leu Tyr Ala Glu Gly Ser Val Asn Gly Phe Ile Ser Thr Leu Gly Leu
          20          25          30
Val Asp Asp Arg Cys Val Val His Pro Glu Ala Gly Asp Leu Thr Asn
          35          40          45
Pro Pro Lys Lys Phe Arg Asp Cys Leu Phe Lys Val Cys Pro Met Asn
          50          55          60
Arg Tyr Ser Ala Gln Lys Gln Tyr Trp Lys Ala Lys Gln Ala Lys Gln
65          70          75          80
Gly Asn His Thr Glu Ala Ala Leu Leu Lys Lys Leu Gln His Ala Ala
          85          90          95
Glu Leu Glu Gln Lys Gln Asn Glu Ser Glu Asn Arg Lys Leu Leu Gly
          100         105         110
Glu Ile Val Lys Tyr Ser Lys Val Ile Gln Leu Leu His Ile Lys Ser
          115         120         125
Asn Lys Tyr Leu Thr Val Asn Lys Arg Leu Pro Ala Leu Leu Glu Lys
          130         135         140
Asn Ala Met Arg Val Ser Leu Asp Ala Ala Gly Asn Glu Gly Ser Trp
145         150         155         160
Phe Tyr Ile His Pro Phe Trp Lys Leu Arg Ser Glu Gly Asp Asn Ile
          165          170          175

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Val	Val	Gly	Asp	Lys	Val	Val	Leu	Met	Pro	Val	Asn	Ala	Gly	Gln	Pro	180	185	190
Leu	His	Ala	Ser	Asn	Val	Glu	Leu	Leu	Asp	Asn	Pro	Gly	Cys	Lys	Glu	195	200	205
Val	Asn	Ala	Val	Asn	Cys	Asn	Thr	Ser	Trp	Lys	Ile	Thr	Leu	Phe	Met	210	215	220
Lys	Phe	Ser	Ser	Tyr	Arg	Glu	Asp	Val	Leu	Lys	Gly	Gly	Asp	Val	Val	225	230	235
Arg	Leu	Phe	His	Ala	Glu	Gln	Glu	Lys	Phe	Leu	Thr	Cys	Asp	Asp	Tyr	245	250	255
Glu	Lys	Lys	Gln	His	Ile	Phe	Leu	Arg	Thr	Thr	Leu	Arg	Gln	Ser	Ala	260	265	270
Thr	Ser	Ala	Thr	Ser	Ser	Lys	Ala	Leu	Trp	Glu	Ile	Glu	Val	Val	His	275	280	285
His	Asp	Pro	Cys	Arg	Gly	Gly	Ala	Gly	Gln	Trp	Asn	Ser	Leu	Phe	Arg	290	295	300
Phe	Lys	His	Leu	Ala	Thr	Gly	Asn	Tyr	Leu	Ala	Ala	Glu	Leu	Asn	Pro	305	310	315
Asp	Tyr	Arg	Asp	Ala	Gln	Asn	Glu	Gly	Lys	Thr	Val	Arg	Asp	Gly	Glu	325	330	335
Leu	Pro	Thr	Ser	Lys	Lys	Lys	His	Gln	Ala	Gly	Glu	Lys	Ile	Met	Tyr	340	345	350
Thr	Leu	Val	Ser	Val	Pro	His	Gly	Asn	Asp	Ile	Ala	Ser	Leu	Phe	Glu	355	360	365
Leu	Asp	Ala	Thr	Thr	Leu	Gln	Arg	Ala	Asp	Cys	Leu	Val	Pro	Arg	Asn	370	375	380
Ser	Tyr	Val	Arg	Leu	Arg	His	Leu	Cys	Thr	Asn	Thr	Trp	Val	Thr	Ser	385	390	395
Thr	Ser	Ile	Pro	Ile	Asp	Thr	Glu	Glu	Glu	Arg	Pro	Val	Met	Leu	Lys	405	410	415
Ile	Gly	Thr	Cys	Gln	Thr	Lys	Glu	Asp	Lys	Glu	Ala	Phe	Ala	Ile	Val	420	425	430
Cys	Val	Pro	Leu	Ser	Glu	Val	Arg	Asp	Leu	Asp	Phe	Ala	Asn	Asp	Ala	435	440	445
Asn	Lys	Val	Leu	Ala	Thr	Thr	Val	Lys	Lys	Leu	Glu	Asn	Gly	Ser	Ile	450	455	460
Thr	Gln	Asn	Glu	Arg	Arg	Phe	Val	Thr	Lys	Leu	Leu	Glu	Asp	Leu	Ile	465	470	475
Phe	Phe	Val	Ala	Asp	Val	Thr	Asn	Asn	Gly	Gln	Asp	Val	Leu	Asp	Val	485	490	495
Val	Ile	Thr	Lys	Pro	Asn	Arg	Glu	Arg	Gln	Lys	Leu	Met	Arg	Glu	Gln	500	505	510
Asn	Ile	Leu	Ala	Gln	Val	Phe	Gly	Ile	Leu	Lys	Ala	Pro	Phe	Lys	Glu	515	520	525
Lys	Ala	Gly	Glu	Gly	Ser	Met	Leu	Arg	Leu	Glu	Asp	Leu	Gly	Asp	Gln	530	535	540
Arg	Tyr	Ala	Pro	Tyr	Lys	Tyr	Val	Leu	Arg	Leu	Cys	Tyr	Arg	Val	Leu	545	550	555
Arg	His	Ser	Gln	Gln	Asp	Tyr	Arg	Lys	Asn	Gln	Glu	Tyr	Ile	Ala	Lys	565	570	575
Asn	Phe	Cys	Val	Met	Gln	Ser	Gln	Ile	Gly	Tyr	Asp	Ile	Leu	Ala	Glu	580	585	590
Asp	Thr	Ile	Thr	Ala	Leu	Leu	His	Asn	Asn	Arg	Lys	Leu	Leu	Glu	Lys	595	600	605
His	Ile	Thr	Ala	Lys	Glu	Ile	Glu	Thr	Phe	Val	Ser	Leu	Leu	Arg	Arg	610	615	620
Asn	Arg	Glu	Pro	Arg	Phe	Leu	Asp	Tyr	Leu	Ser	Asp	Leu	Cys	Val	Ser	625	630	635
Asn	Ser	Thr	Ala	Ile	Pro	Val	Thr	Gln	Glu	Leu	Ile	Cys	Lys	Phe	Met	645	650	655

Leu	Ser	Pro	Gly	Asn	Ala	Asp	Ile	Leu	Ile	Gln	Thr	Lys	Leu	Val	Ser
			660					665					670		
Met	Gln	Val	Glu	Asn	Pro	Met	Glu	Ser	Ser	Ile	Leu	Pro	Asp	Asp	Ile
		675					680					685			
Asp	Asp	Glu	Glu	Val	Trp	Leu	Tyr	Trp	Ile	Asp	Ser	Asn	Lys	Glu	Pro
	690					695				700					
His	Gly	Lys	Ala	Ile	Arg	His	Leu	Ala	Gln	Glu	Ala	Arg	Glu	Gly	Thr
705					710				715						720
Lys	Ala	Asp	Leu	Glu	Val	Leu	Thr	Tyr	Tyr	Arg	Tyr	Gln	Leu	Asn	Leu
				725					730					735	
Phe	Ala	Arg	Met	Cys	Leu	Asp	Arg	Gln	Tyr	Leu	Ala	Ile	Asn	Gln	Ile
		740						745				750			
Ser	Thr	Gln	Leu	Ser	Val	Asp	Leu	Ile	Leu	Arg	Cys	Val	Ser	Asp	Glu
		755				760						765			
Ser	Leu	Pro	Phe	Asp	Leu	Arg	Ala	Ser	Phe	Cys	Arg	Leu	Met	Leu	His
		770				775				780					
Met	His	Val	Asp	Arg	Asp	Pro	Gln	Glu	Ser	Val	Val	Pro	Val	Arg	Tyr
785					790					795					800
Ala	Arg	Leu	Trp	Thr	Glu	Ile	Pro	Thr	Lys	Ile	Thr	Ile	His	Glu	Tyr
				805					810					815	
Asp	Ser	Ile	Thr	Asp	Ser	Ser	Arg	Asn	Asp	Met	Lys	Arg	Lys	Phe	Ala
			820					825					830		
Leu	Thr	Met	Glu	Phe	Val	Glu	Glu	Tyr	Leu	Lys	Glu	Val	Val	Asn	Gln
		835				840						845			
Pro	Phe	Pro	Phe	Gly	Asp	Lys	Glu	Lys	Asn	Lys	Leu	Thr	Phe	Glu	Val
		850				855					860				
Val	His	Leu	Ala	Arg	Asn	Leu	Ile	Tyr	Phe	Gly	Phe	Tyr	Ser	Phe	Ser
865					870					875					880
Glu	Leu	Leu	Arg	Leu	Thr	Arg	Thr	Leu	Leu	Ala	Ile	Leu	Asp	Ile	Val
				885					890					895	
Gln	Ala	Pro	Met	Ser	Ser	Tyr	Phe	Glu	Arg	Leu	Ser	Lys	Phe	Gln	Asp
			900					905					910		
Gly	Ser	Asn	Asn	Val	Met	Arg	Thr	Ile	His	Gly	Val	Gly	Glu	Met	Met
		915					920					925			
Thr	Gln	Met	Val	Leu	Ser	Arg	Gly	Ser	Ile	Phe	Pro	Val	Ser	Trp	Pro
		930				935					940				
Asp	Ala	Gln	Pro	Ser	Val	His	Pro	Ser	Lys	Gln	Ala	Ser	Pro	Gly	Glu
945					950					955					960
Gln	Glu	Asp	Val	Thr	Val	Met	Asp	Thr	Lys	Leu	Lys	Val	Ile	Glu	Ile
				965					970					975	
Leu	Gln	Phe	Ile	Leu	Ser	Val	Arg	Leu	Asp	Tyr	Arg	Ile	Ser	Tyr	Met
			980					985					990		
Leu	Ser	Ile	Tyr	Lys	Lys	Glu	Phe	Gly	Glu	Asn	Asp	Gly	Asn	Gly	Asp
		995					1000					1005			
Pro	Ser	Ala													

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Glu Asn Gly Asp Met Gly Glu Gly Gln Ala Lys Gly Gly Glu Glu Ala
      1140                      1145                      1150
Asn Glu Glu Ser Asn Leu Leu Ser Pro Val Gln Asp Gly Ala Lys Thr
      1155                      1160                      1165
Pro Gln Ile Asp Ser Asn Lys Gly Asn Asn Tyr Arg Ile Val Lys Glu
      1170                      1175                      1180
Ile Leu Ile Arg Leu Ser Lys Leu Cys Val Gln Asn Lys Lys Cys Arg
      1185                      1190                      1195                      1200
Asn Gln His Gln Arg Leu Leu Lys Asn Met Gly Ala His Ser Val Val
      1205                      1210                      1215
Leu Asp Leu Leu Gln Ile Pro Tyr Glu Lys Thr Asp Glu Lys Met Asn
      1220                      1225                      1230
Glu Val Met Asp Leu Ala His Thr Phe Leu Gln Asn Phe Cys Arg Gly
      1235                      1240                      1245
Asn Pro Gln Asn Gln Val Leu Leu His Lys His Leu Asn Leu Phe Leu
      1250                      1255                      1260
Thr Pro Gly Leu Leu Glu Ala Glu Thr Met Arg His Ile Phe Met Asn
      1265                      1270                      1275                      1280
Asn Tyr His Leu Cys Asn Glu Ile Ser Glu Arg Val Val Gln His Phe
      1285                      1290                      1295
Val His Cys Ile Glu Thr His Gly Arg His Val Glu Tyr Leu Arg Phe
      1300                      1305                      1310
Leu Gln Thr Ile Val Lys Ala Asp Gly Lys Tyr Val Lys Lys Cys Gln
      1315                      1320                      1325
Asp Met Val Met Thr Glu Leu Ile Asn Gly Gly Glu Asp Val Leu Ile
      1330                      1335                      1340
Phe Tyr Asn Asp Arg Ala Ser Phe Pro Ile Leu Leu Asn Met Met Cys
      1345                      1350                      1355                      1360
Ser Glu Arg Ala Arg Gly Asp Glu Ser Gly Pro Leu Ala Tyr His Ile
      1365                      1370                      1375
Thr Leu Val Glu Leu Leu Ala Ala Cys Thr Glu Gly Lys Asn Val Tyr
      1380                      1385                      1390
Thr Glu Ile Lys Cys Asn Ser Leu Leu Pro Leu Asp Asp Ile Val Arg
      1395                      1400                      1405
Val Val Thr His Asp Asp Cys Ile Pro Glu Val Lys Ile Ala Tyr Val
      1410                      1415                      1420
Asn Phe Val Asn His Cys Tyr Val Asp Thr Glu Val Glu Met Lys Glu
      1425                      1430                      1435                      1440
Ile Tyr Thr Ser Asn His Ile Trp Lys Leu Phe Glu Asn Phe Leu Val
      1445                      1450                      1455
Asp Met Ala Arg Val Cys Asn Thr Thr Thr Asp Arg Lys His Ala Asp
      1460                      1465                      1470
Thr Phe Leu Glu Arg Cys Val Thr Glu Ser Val Met Asn Ile Val Ser
      1475                      1480                      1485
Gly Phe Phe Asn Ser Pro Phe Ser Asp Asn Ser Thr Ser Leu Gln Thr
      1490                      1495                      1500
His Gln Pro Val Phe Ile Gln Leu Leu Gln Ser Ala Phe Arg Ile Tyr
      1505                      1510                      1515                      1520
Asn Cys Thr Trp Pro Asn Pro Ala Gln Lys Ala Ser Val Glu Ser Cys
      1525                      1530                      1535
Ile Arg Ala Leu Ala Glu Val Ala Lys Asn Arg Gly Ile Ala Ile Pro
      1540                      1545                      1550
Val Asp Leu Asp Ser Gln Val Asn Thr Leu Phe Met Lys Asn His Ser
      1555                      1560                      1565
Ser Thr Val Gln Arg Ala Ala Met Gly Trp Arg Leu Ser Ala Arg Ser
      1570                      1575                      1580
Gly Pro Arg Phe Lys Glu Ala Leu Gly Gly Pro Ala Trp Asp Tyr Arg
      1585                      1590                      1595                      1600
Asn Ile Ile Glu Lys Leu Gln Asp Val Val Ala Ser Leu Glu Gln Gln
      1605                      1610                      1615

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Phe Ser Pro Met Met Gln Ala Glu Phe Ser Val Leu Val Asp Val Leu  
 1620 1625 1630  
 Tyr Ser Pro Glu Leu Leu Phe Pro Glu Gly Ser Asp Ala Arg Ile Arg  
 1635 1640 1645  
 Cys Gly Ala Phe Met Ser Lys Leu Ile Asn His Thr Lys Lys Leu Met  
 1650 1655 1660  
 Glu Lys Glu Glu Lys Leu Cys Ile Lys Ile Leu Gln Thr Leu Arg Glu  
 1665 1670 1675 1680  
 Met Leu Glu Lys Lys Asp Ser Phe Met Glu Glu Ser Ser Thr Leu Arg  
 1685 1690 1695  
 Lys Ile Leu Leu Asn Arg Tyr Phe Lys Gly Asp His Ser Val Gly Val  
 1700 1705 1710  
 Asn Gly Pro Leu Ser Gly Ala Tyr Ala Lys Thr Ala Gln Val Gly Gly  
 1715 1720 1725  
 Gly Phe Thr Gly Gln Asp Ala Asp Lys Thr Gly Ile Ser Met Ser Asp  
 1730 1735 1740  
 Ile Gln Cys Leu Leu Asp Lys Glu Gly Ala Ser Glu Leu Val Ile Asp  
 1745 1750 1755 1760  
 Val Ile Val Asn Thr Lys Asn Asp Arg Ile Phe Ser Glu Gly Ile Leu  
 1765 1770 1775  
 Leu Gly Ile Ala Leu Leu Glu Gly Gly Asn Thr Gln Thr Gln Asn Ser  
 1780 1785 1790  
 Phe Tyr Gln Gln Leu His Glu Gln Lys Lys Ser Glu Lys Phe Phe Lys  
 1795 1800 1805  
 Val Leu Tyr Asp Arg Met Lys Ala Ala Gln Lys Glu Ile Arg Ser Thr  
 1810 1815 1820  
 Val Thr Val Asn Thr Ile Asp Leu Gly Ser Lys Lys Arg Glu Glu Asp  
 1825 1830 1835 1840  
 Ser Asp Leu Met Ala Leu Gly Pro Arg Met Arg Val Arg Asp Ser Ser  
 1845 1850 1855  
 Leu His Leu Lys Glu Gly Met Lys Gly Gln Leu Thr Glu Ala Ser Ser  
 1860 1865 1870  
 Ala Thr Ser Lys Ala Tyr Cys Val Tyr Arg Arg Glu Met Asp Pro Asp  
 1875 1880 1885  
 Ile Asp Thr Met Cys Pro Gly Gln Glu Ala Gly Ser Ala Glu Glu Lys  
 1890 1895 1900  
 Ser Ala Glu Glu Val Thr Met Ser Pro Ala Ile Thr Ile Met Arg Pro  
 1905 1910 1915 1920  
 Ile Leu Arg Phe Leu Gln Leu Leu Cys Glu Asn His Asn Arg Glu Leu  
 1925 1930 1935  
 Gln Asn Phe Leu Arg Asn Gln Asn Asn Lys Thr Asn Tyr Asn Leu Val  
 1940 1945 1950  
 Cys Glu Thr Leu Gln Phe Leu Asp Cys Ile Cys Gly Ser Thr Thr Gly  
 1955 1960 1965  
 Gly Leu Gly Leu Leu Gly Leu Tyr Ile Asn Glu Lys Asn Val Ala Leu  
 1970 1975 1980  
 Val Asn Gln Thr Leu Glu Ser Leu Thr Glu Tyr Cys Gln Gly Pro Cys  
 1985 1990 1995 2000  
 His Glu Asn Gln Thr Cys Ile Ala Thr His Glu Ser Asn Gly Ile Asp  
 2005 2010 2015  
 Ile Ile Ile Ala Leu Ile Leu Ser Asp Ile Asn Pro Leu Gly Lys Tyr  
 2020 2025 2030  
 Arg Met Asp Leu Val Leu Gln Leu Lys Asn Asn Ala Ser Lys Leu Leu  
 2035 2040 2045  
 Leu Ala Ile Met Glu Ser Arg His Asp Ser Glu Asn Ala Glu Arg Ile  
 2050 2055 2060  
 Leu Phe Asn Met Arg Pro Lys Glu Leu Val Asp Val Met Lys Asn Ala  
 2065 2070 2075 2080  
 Tyr Asn Gln Gly Leu Glu Cys Asn His Gly Asp Glu Glu Gly Gly Asp  
 2085 2090 2095

Asp Gly Val Ser Pro Lys Asp Val Gly His Asn Ile Tyr Ile Leu Ala  
 2100 2105 2110  
 His Gln Leu Ala Arg His Asn Lys Leu Leu Gln Gln Met Leu Lys Pro  
 2115 2120 2125  
 Gly Ser Asp Pro Glu Glu Gly Asp Glu Ala Leu Lys Tyr Tyr Ala Asn  
 2130 2135 2140  
 His Thr Ala Gln Ile Glu Ile Val Arg His Asp Arg Thr Met Glu Gln  
 2145 2150 2155 2160  
 Ile Val Phe Pro Val Pro Asn Ile Cys Glu Phe Leu Thr Arg Glu Ser  
 2165 2170 2175  
 Lys Tyr Arg Val Phe Asn Thr Thr Glu Arg Asp Glu Gln Gly Ser Lys  
 2180 2185 2190  
 Val Asn Asp Phe Phe Gln Gln Thr Glu Asp Leu Tyr Asn Glu Met Lys  
 2195 2200 2205  
 Trp Gln Lys Lys Ile Arg Asn Asn Pro Ala Leu Phe Trp Phe Ser Arg  
 2210 2215 2220  
 His Ile Ser Leu Trp Gly Ser Ile Ser Phe Asn Leu Ala Val Phe Ile  
 2225 2230 2235 2240  
 Asn Leu Ala Val Ala Leu Phe Tyr Pro Phe Gly Asp Asp Gly Asp Glu  
 2245 2250 2255  
 Gly Thr Leu Ser Pro Leu Phe Ser Ala Leu Leu Trp Val Ala Val Ala  
 2260 2265 2270  
 Ile Cys Thr Ser Met Leu Phe Phe Phe Ser Lys Pro Val Gly Ile Arg  
 2275 2280 2285  
 Pro Phe Leu Val Ser Ile Met Leu Arg Ser Ile Tyr Thr Ile Gly Leu  
 2290 2295 2300  
 Gly Pro Thr Leu Ile Leu Leu Gly Ala Ala Asn Leu Cys Asn Lys Ile  
 2305 2310 2315 2320  
 Val Phe Leu Val Ser Phe Val Gly Asn Arg Gly Thr Phe Thr Arg Gly  
 2325 2330 2335  
 Tyr Arg Ala Val Ile Leu Asp Met Ala Phe Leu Tyr His Val Ala Tyr  
 2340 2345 2350  
 Val Leu Val Cys Met Leu Gly Leu Phe Val His Glu Phe Phe Tyr Ser  
 2355 2360 2365  
 Phe Leu Leu Phe Asp Leu Val Tyr Arg Glu Glu Thr Leu Leu Asn Val  
 2370 2375 2380  
 Ile Lys Ser Val Thr Arg Asn Gly Arg Ser Ile Ile Leu Thr Ala Val  
 2385 2390 2395 2400  
 Leu Ala Leu Ile Leu Val Tyr Leu Phe Ser Ile Ile Gly Phe Leu Phe  
 2405 2410 2415  
 Leu Lys Asp Asp Phe Thr Met Glu Val Asp Arg Leu Lys Asn Arg Thr  
 2420 2425 2430  
 Pro Val Thr Gly Asn Asp Gly Val Pro Thr Met Thr Leu Thr Ser Met  
 2435 2440 2445  
 Leu Gly Thr Cys Pro Lys Glu Asn Cys Ser Pro Thr Ile Pro Ser Ser  
 2450 2455 2460  
 Asn Ala Ala Gly Glu Gly Gly Glu Asp Gly Ile Glu Arg Thr Cys Asp  
 2465 2470 2475 2480  
 Thr Leu Leu Met Cys Ile Val Thr Val Leu Asn Gln Gly Leu Arg Asn  
 2485 2490 2495  
 Gly Gly Gly Val Gly Asp Val Leu Arg Arg Pro Ser Lys Asp Glu Pro  
 2500 2505 2510  
 Leu Phe Ala Ala Arg Val Val Tyr Asp Leu Leu Phe Phe Phe Ile Val  
 2515 2520 2525  
 Ile Ile Ile Val Leu Asn Leu Ile Phe Gly Val Ile Ile Asp Thr Phe  
 2530 2535 2540  
 Ala Asp Leu Arg Ser Glu Lys Gln Lys Lys Glu Lys Ile Leu Lys Thr  
 2545 2550 2555 2560  
 Thr Cys Phe Ile Cys Gly Leu Glu Arg Asp Lys Phe Asp Asn Lys Thr  
 2565 2570 2575



Val Ser Phe Glu Glu His Ile Lys Ser Glu His Asn Met Trp His Tyr  
 2580 2585 2590  
 Leu Tyr Phe Ile Val Leu Val Lys Val Lys Asp Pro Thr Glu Tyr Thr  
 2595 2600 2605  
 Gly Pro Glu Ser Tyr Val Ala Gln Met Ile Thr Glu Lys Asn Leu Asp  
 2610 2615 2620  
 Trp Phe Pro Arg Met Arg Ala Met Ser Leu Val Ser Asn Glu Gly Asp  
 2625 2630 2635 2640  
 Ser Glu Gln Asn Glu Ile Arg Asn Leu Gln Glu Lys Leu Glu Ser Thr  
 2645 2650 2655  
 Met Ser Leu Val Lys Gln Leu Ser Gly Gln Leu Ala Glu Leu Lys Glu  
 2660 2665 2670  
 Gln Met Thr Glu Gln Arg Lys Asn Lys Gln Arg Leu Gly Phe Leu Gly  
 2675 2680 2685  
 Ser Asn Thr Pro His Glu Asn His His Met Pro Pro His  
 2690 2695 2700

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<211> 2670

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =  
 synthetic construct

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 Asp Asp Arg Cys Val Val Glu Pro Ala Ala Gly Asp Leu Asp Asn Pro  
 35 40 45  
 Pro Lys Lys Phe Arg Asp Cys Leu Phe Lys Val Cys Pro Met Asn Arg  
 50 55 60  
 Tyr Ser Ala Gln Lys Gln Tyr Trp Lys Ala Lys Gln Thr Lys Gln Asp  
 65 70 75 80  
 Lys Glu Lys Ile Ala Asp Val Val Leu Leu Gln Lys Leu Gln His Ala  
 85 90 95  
 Ala Gln Met Glu Gln Lys Gln Asn Asp Thr Glu Asn Lys Lys Val His  
 100 105 110  
 Gly Asp Val Lys Tyr Gly Ser Val Ile Gln Leu Leu His Met Lys  
 115 120 125  
 Ser Asn Lys Tyr Leu Thr Val Asn Lys Arg Leu Pro Ala Leu Leu Glu  
 130 135 140  
 Lys Asn Ala Met Arg Val Thr Leu Asp Ala Thr Gly Asn Glu Gly Ser  
 145 150 155 160  
 Trp Leu Phe Ile Gln Pro Phe Trp Lys Leu Arg Ser Asn Gly Asp Asn  
 165 170 175  
 Val Val Val Gly Asp Lys Val Ile Leu Asn Pro Val Asn Ala Gly Gln  
 180 185 190  
 Pro Leu His Ala Ser Asn Tyr Glu Leu Ser Asp Asn Val Gly Cys Lys  
 195 200 205  
 Glu Val Asn Ser Val Asn Cys Asn Thr Ser Trp Lys Ile Asn Leu Phe  
 210 215 220  
 Met Gln Phe Arg Asp His Leu Glu Glu Val Leu Lys Gly Gly Asp Val  
 225 230 235 240  
 Val Arg Leu Phe His Ala Glu Gln Glu Lys Phe Leu Thr Cys Asp Glu  
 245 250 255

Tyr Arg Gly Lys Leu Gln Val Phe Leu Arg Thr Thr Leu Arg Gln Ser  
 260 265 270  
 Ala Thr Ser Ala Thr Ser Ser Asn Ala Leu Trp Glu Val Glu Val Val  
 275 280 285  
 His His Asp Pro Cys Arg Gly Gly Ala Gly His Trp Asn Gly Leu Tyr  
 290 295 300  
 Arg Phe Lys His Leu Ala Thr Gly Asn Tyr Leu Ala Ala Glu Glu Asn  
 305 310 315 320  
 Pro Ser Tyr Lys Gly Asp Val Ser Asp Pro Lys Ala Ala Gly Pro Gly  
 325 330 335  
 Ala Gln Ser Arg Thr Gly Arg Arg Asn Ala Gly Glu Lys Ile Lys Tyr  
 340 345 350  
 Arg Leu Val Ala Val Pro His Gly Asn Asp Ile Ala Ser Leu Phe Glu  
 355 360 365  
 Leu Asp Pro Thr Thr Leu Gln Lys Thr Asp Ser Phe Val Pro Arg Asn  
 370 375 380  
 Ser Tyr Val Arg Leu Arg His Leu Cys Thr Asn Thr Trp Ile Gln Ser  
 385 390 395 400  
 Thr Asn Ala Pro Ile Asp Val Glu Glu Glu Arg Pro Ile Arg Leu Met  
 405 410 415  
 Leu Gly Thr Cys Pro Thr Lys Glu Asp Lys Glu Ala Phe Ala Ile Val  
 420 425 430  
 Ser Val Pro Val Ser Glu Ile Arg Asp Leu Asp Phe Ala Asn Asp Ala  
 435 440 445  
 Ser Ser Met Leu Ala Ser Ala Val Glu Lys Leu Asn Glu Gly Phe Ile  
 450 455 460  
 Ser Gln Asn Asp Arg Arg Phe Val Ile Gln Leu Leu Glu Asp Leu Val  
 465 470 475 480  
 Phe Phe Val Ser Asp Val Pro Asn Asn Gly Gln Asn Val Leu Asp Ile  
 485 490 495  
 Met Val Thr Lys Pro Asn Arg Glu Arg Gln Lys Leu Met Arg Asp Glu  
 500 505 510  
 Asn Ile Leu Lys Gln Ile Phe Gly Ile Leu Lys Ala Pro Phe Arg Asp  
 515 520 525  
 Lys Gly Gly Glu Gly Pro Leu Val Arg Leu Glu Glu Leu Ser Asp Gln  
 530 535 540  
 Lys Asn Ala Pro Tyr Gln Tyr Met Phe Arg Leu Cys Tyr Arg Val Leu  
 545 550 555 560  
 Arg His Ser Gln Glu Asp Tyr Arg Lys Asn Gln Glu His Ile Ala Lys  
 565 570 575  
 Gln Phe Gly Met Met Gln Ser Gln Ile Gly Tyr Asp Ile Leu Ala Glu  
 580 585 590  
 Asp Thr Ile Thr Ala Leu Leu His Asn Asn Arg Lys Leu Leu Glu Lys  
 595 600 605  
 His Ile Thr Lys Thr Glu Val Glu Thr Phe Val Ser Leu Val Arg Lys  
 610 615 620  
 Asn Arg Glu Pro Arg Phe Leu Asp Tyr Leu Ser Asp Leu Cys Val Ser  
 625 630 635 640  
 Asn Arg Ile Ala Ile Pro Val Thr Gln Glu Leu Ile Cys Lys Cys Val  
 645 650 655  
 Leu Asp Pro Lys Asn Ser Asp Ile Leu Ile Gln Thr Glu Leu Arg Pro  
 660 665 670  
 Val Lys Glu Met Ala Gln Ser His Glu Tyr Leu Ser Ile Glu Tyr Ser  
 675 680 685  
 Glu Glu Glu Val Trp Leu Thr Trp Thr Asp Arg Asn Asn Glu His His  
 690 695 700  
 Glu Lys Ser Val Arg Gln Leu Ala Gln Glu Ala Arg Ala Gly Asn Ala  
 705 710 715 720  
 His Asp Glu Asn Val Leu Ser Tyr Tyr Arg Tyr Gln Leu Lys Leu Phe  
 725 730 735

Ala Arg Met Cys Leu Asp Arg Gln Tyr Leu Ala Ile Asp Glu Ile Ser  
 740 745 750  
 Lys Gln Leu Gly Val Glu Leu Leu Phe Leu Cys Met Ala Asp Glu Met  
 755 760 765  
 Leu Pro Phe Asp Leu Arg Ala Ser Phe Cys His Leu Met Leu His Val  
 770 775 780  
 His Val Asp Arg Asp Pro Gln Glu Leu Val Thr Pro Val Lys Phe Ala  
 785 790 795 800  
 Arg Leu Trp Thr Glu Ile Pro Thr Ala Ile Thr Ile Lys Asp Tyr Asp  
 805 810 815  
 Ser Asn Leu Asn Ala Ser Arg Asp Asp Lys Lys Asn Lys Phe Ala Ser  
 820 825 830  
 Thr Met Glu Phe Val Glu Asp Tyr Leu Asn Asn Val Val Gly Glu Ala  
 835 840 845  
 Val Pro Phe Ala Asn Asp Glu Lys Asn Ile Leu Thr Phe Glu Val Val  
 850 855 860  
 Ser Leu Ala His Asn Leu Ile Tyr Phe Gly Phe Tyr Ser Phe Ser Glu  
 865 870 875 880  
 Leu Leu Arg Leu Thr Arg Thr Leu Leu Gly Ile Ile Asp Cys Ile Gln  
 885 890 895  
 Ala Pro Ala Ala Val Leu Gln Ala Tyr Glu Glu Pro Gly Gly Lys Asn  
 900 905 910  
 Val Arg Arg Ser Ile Gln Gly Val Gly His Met Met Ser Thr Met Val  
 915 920 925  
 Leu Ser Arg Lys Gln Ser Val Phe Gly Ala Ser Ser Leu Pro Thr Gly  
 930 935 940  
 Val Gly Val Pro Glu Gln Leu Asp Arg Ser Lys Phe Glu Asp Asn Glu  
 945 950 955 960  
 His Thr Val Val Met Glu Thr Lys Leu Lys Ile Leu Glu Ile Leu Gln  
 965 970 975  
 Phe Ile Leu Asn Val Arg Leu Asp Tyr Arg Ile Ser Tyr Leu Leu Ser  
 980 985 990  
 Val Phe Lys Lys Glu Phe Val Glu Val Phe Pro Met Gln Asp Ser Gly  
 995 1000 1005  
 Ala Asp Gly Thr Ala Pro Ala Phe Asp Ser Ser Thr Ala Asn Met Asn  
 1010 1015 1020  
 Leu Asp Arg Ile Gly Glu Gln Ala Glu Ala Met Phe Gly Val Gly Lys  
 1025 1030 1035 1040  
 Thr Ser Ser Met Leu Glu Val Asp Asp Glu Gly Gly Arg Met Phe Leu  
 1045 1050 1055  
 Arg Val Leu Leu His Leu Thr Met His Asp Tyr Pro Pro Leu Val Ser  
 1060 1065 1070  
 Gly Ala Leu Gln Leu Leu Phe Lys His Phe Ser Gln Arg Gln Glu Ala  
 1075 1080 1085  
 Met His Thr Phe Lys Gln Val Gln Leu Leu Ile Ser Ala Gln Asp Val  
 1090 1095 1100  
 Glu Asn Tyr Lys Val Ile Lys Ser Glu Leu Asp Arg Leu Arg Thr Met  
 1105 1110 1115 1120  
 Val Glu Lys Ser Glu Leu Trp Val Asp Lys Lys Gly Ser Val Lys Gly  
 1125 1130 1135  
 Glu Glu Gly Glu Ala Gly Ala Ser Lys Asp Lys Lys Glu Arg Pro Ser  
 1140 1145 1150  
 Asp Glu Glu Gly Phe Leu Gln Pro His Gly Glu Lys Ser Ser Glu Asn  
 1155 1160 1165  
 Tyr Gln Ile Val Lys Gly Ile Leu Glu Arg Leu Asn Lys Met Cys Gly  
 1170 1175 1180  
 Val Gly Glu Gln Met Arg Lys Lys Gln Gln Arg Leu Leu Lys Asn Met  
 1185 1190 1195 1200  
 Asp Ala His Lys Val Met Leu Asp Leu Leu Gln Ile Pro Tyr Asp Lys  
 1205 1210 1215

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Asn Asp Asn Lys Met Met Glu Ile Leu Arg Tyr Thr His Gln Phe Leu
      1220                      1225                      1230
Gln Lys Phe Cys Ala Gly Asn Pro Gly Asn Gln Ala Leu Leu His Lys
      1235                      1240                      1245
His Leu Gln Leu Phe Leu Thr Pro Gly Leu Leu Glu Ala Glu Thr Met
      1250                      1255                      1260
Gln His Ile Phe Leu Asn Asn Tyr Gln Leu Cys Ser Glu Ile Ser Glu
      1265                      1270                      1275                      1280
Pro Val Leu Gln His Phe Val His Cys Trp Pro Thr His Gly Arg His
      1285                      1290                      1295
Val Gln Tyr Leu Asp Phe Leu His Thr Val Ile Lys Ala Glu Gly Lys
      1300                      1305                      1310
Tyr Val Lys Lys Cys Gln Asp Met Ile Met Thr Glu Leu Thr Asn Ala
      1315                      1320                      1325
Gly Asp Asp Val Val Val Phe Tyr Asn Asp Lys Ala Ser Leu Ala His
      1330                      1335                      1340
Leu Leu Asp Met Met Lys Ala Ala Arg Asp Gly Val Glu Asp His Ser
      1345                      1350                      1355                      1360
Pro Leu Met Tyr His Ile Ser Leu Val Asp Leu Leu Ala Ala Cys Ala
      1365                      1370                      1375
Glu Gly Lys Asn Val Tyr Thr Glu Ile Lys Cys Thr Ser Leu Leu Pro
      1380                      1385                      1390
Leu Glu Asp Val Val Ser Val Val Thr His Glu Asp Cys Ile Thr Glu
      1395                      1400                      1405
Val Lys Met Ala Tyr Val Asn Phe Val Asn His Cys Tyr Val Asp Thr
      1410                      1415                      1420
Glu Val Glu Met Lys Glu Ile Tyr Thr Ser Asn His Ile Trp Thr Leu
      1425                      1430                      1435                      1440
Phe Glu Asn Phe Thr Leu Asp Met Ala Leu Val Cys Asn Lys Arg Glu
      1445                      1450                      1455
Lys Arg Leu Ser Asp Pro Thr Leu Glu Lys Tyr Val Leu Thr Val Val
      1460                      1465                      1470
Leu Asp Thr Ile Ser Ala Phe Phe Ser Ser Pro Phe Ser Glu Asn Ser
      1475                      1480                      1485
Thr Ser Leu Gln Thr His Gln Thr Ile Val Val Gln Leu Leu Gln Ser
      1490                      1495                      1500
Thr Thr Arg Leu Leu Glu Cys Pro Trp Leu Gln Gln His Lys Gly
      1505                      1510                      1515                      1520
Ser Val Glu Ala Cys Val Arg Thr Leu Ala Met Val Ala Lys Ser Arg
      1525                      1530                      1535
Ala Ile Leu Leu Pro Met Asp Leu Asp Ala His Met Ser Ala Leu Leu
      1540                      1545                      1550
Ser Ser Gly Gly Ser Cys Ser Ala Ala Ala Gln Arg Ser Ala Ala Asn
      1555                      1560                      1565
Tyr Lys Thr Ala Thr Arg Thr Phe Pro Arg Val Ile Pro Thr Ala Asn
      1570                      1575                      1580
Gln Trp Asp Tyr Lys Asn Ile Ile Glu Lys Leu Gln Asp Ile Ile Thr
      1585                      1590                      1595                      1600
Ala Leu Glu Glu Arg Leu Lys Pro Leu Val Gln Ala Glu Leu Ser Val
      1605                      1610                      1615
Leu Val Asp Met Leu His Trp Pro Glu Leu Leu Phe Leu Glu Gly Ser
      1620                      1625                      1630
Glu Ala Tyr Gln Arg Cys Glu Ser Gly Gly Phe Leu Ser Lys Leu Ile
      1635                      1640                      1645
Arg His Thr Lys Gly Leu Met Glu Ser Glu Glu Lys Leu Cys Val Lys
      1650                      1655                      1660
Val Leu Arg Thr Leu Gln Gln Met Leu Gln Lys Lys Ser Lys Tyr Gly
      1665                      1670                      1675                      1680
Asp Arg Gly Asn Gln Leu Arg Lys Met Leu Leu Gln Asn Tyr Leu Gln
      1685                      1690                      1695

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Asn Arg Lys Ser Gly Pro Arg Gly Glu Leu Thr Asp Pro Thr Gly Ser  
 1700 1705 1710  
 Gly Val Asp Gln Asp Trp Ser Ala Ile Ala Ala Thr Gln Cys Arg Leu  
 1715 1720 1725  
 Asp Lys Glu Gly Ala Thr Lys Leu Val Cys Asp Leu Ile Thr Ser Thr  
 1730 1735 1740  
 Lys Asn Glu Lys Ile Phe Gln Glu Ser Ile Gly Leu Ala Ile Arg Leu  
 1745 1750 1755 1760  
 Leu Asp Gly Gly Asn Thr Glu Ile Gln Lys Ser Phe Tyr Asn Leu Met  
 1765 1770 1775  
 Thr Ser Asp Lys Lys Ser Glu Arg Phe Phe Lys Val Leu His Asp Arg  
 1780 1785 1790  
 Met Lys Arg Ala Gln Gln Glu Thr Lys Ser Thr Val Ala Val Asn Met  
 1795 1800 1805  
 Ser Asp Leu Gly Ser Gln Pro Arg Glu Asp Arg Glu Pro Ala Asp Pro  
 1810 1815 1820  
 Thr Thr Lys Gly Arg Val Ser Ser Phe Ser Met Pro Ser Ser Ser Arg  
 1825 1830 1835 1840  
 Tyr Ser Leu Gly Pro Gly Leu His Arg Gly His Asp Val Ser Glu Arg  
 1845 1850 1855  
 Ala Gln Asn Asn Glu Met Gly Thr Ser Val Leu Ile Met Arg Pro Ile  
 1860 1865 1870  
 Leu Arg Phe Leu Gln Leu Leu Cys Glu Asn His Asn Arg Asp Leu Gln  
 1875 1880 1885  
 Asn Phe Leu Arg Cys Gln Asn Asn Lys Thr Asn Tyr Asn Leu Val Cys  
 1890 1895 1900  
 Glu Thr Leu Gln Phe Leu Asp Ile Met Cys Gly Ser Thr Thr Gly Gly  
 1905 1910 1915 1920  
 Leu Gly Leu Leu Gly Leu Tyr Ile Asn Glu Asp Asn Val Gly Leu Val  
 1925 1930 1935  
 Ile Gln Thr Leu Glu Thr Leu Thr Glu Tyr Cys Gln Gly Pro Cys His  
 1940 1945 1950  
 Glu Asn Gln Thr Cys Ile Val Thr His Glu Ser Asn Gly Ile Asp Ile  
 1955 1960 1965  
 Ile Thr Ala Leu Ile Leu Asn Asp Ile Ser Pro Leu Cys Lys Tyr Arg  
 1970 1975 1980  
 Met Asp Leu Val Leu Gln Leu Lys Asp Asn Ala Ser Lys Leu Leu Leu  
 1985 1990 1995 2000  
 Ala Leu Met Glu Ser Arg His Asp Ser Glu Asn Ala Glu Arg Ile Leu  
 2005 2010 2015  
 Ile Ser Leu Arg Pro Gln Glu Leu Val Asp Val Ile Lys Lys Ala Tyr  
 2020 2025 2030  
 Leu Gln Glu Glu Glu Arg Glu Asn Ser Glu Val Ser Pro Arg Glu Val  
 2035 2040 2045  
 Gly His Asn Ile Tyr Ile Leu Ala Leu Gln Leu Ser Arg His Asn Lys  
 2050 2055 2060  
 Gln Leu Gln His Leu Leu Lys Pro Val Lys Arg Ile Gln Glu Glu Glu  
 2065 2070 2075 2080  
 Ala Glu Gly Ile Ser Ser Met Leu Ser Leu Asn Asn Lys Gln Leu Ser  
 2085 2090 2095  
 Gln Met Leu Lys Ser Ser Ala Pro Ala Gln Glu Glu Glu Glu Asp Pro  
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 Asp Arg Ser Met Glu Gln Ile Val Phe Pro Val Pro Ala Ile Cys Gln  
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 Phe Leu Thr Glu Glu Thr Lys His Arg Leu Phe Thr Thr Thr Glu Gln  
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 Asp Glu Gln Gly Ser Lys Val Ser Asp Phe Phe Asp Gln Ser Ser Phe  
 2165 2170 2175

Leu His Asn Glu Met Glu Trp Gln Arg Arg Leu Arg Ser Met Pro Leu  
 2180 2185 2190  
 Ile Tyr Trp Phe Ser Arg Arg Met Thr Leu Trp Gly Ser Ile Ser Phe  
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 Asn Leu Ala Val Phe Ile Asn Ile Ile Ile Ala Phe Phe Tyr Pro Tyr  
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 Val Glu Gly Ala Ser Thr Gly Val Leu Gly Ser Pro Leu Ile Ser Leu  
 2225 2230 2235 2240  
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 2245 2250 2255  
 His Tyr Ser Val Arg Pro Leu Ile Val Ala Leu Val Leu Arg Ser Ile  
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 2435 2440 2445  
 Ser Thr Glu Arg Ala Cys Asp Thr Leu Leu Met Cys Ile Val Thr Val  
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 Met Asn His Gly Leu Arg Asn Gly Gly Gly Val Gly Asp Ile Leu Arg  
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 Asp Lys Phe Asp Asn Lys Thr Val Ser Phe Glu Glu His Ile Lys Leu  
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 Glu His Asn Met Trp Asn Tyr Leu Tyr Phe Ile Val Leu Val Arg Val  
 2565 2570 2575  
 Lys Asn Lys Thr Asp Tyr Thr Gly Pro Glu Ser Tyr Val Ala Gln Met  
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 Ile Lys Asn Lys Asn Leu Asp Trp Phe Pro Arg Met Arg Ala Met Ser  
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 Leu Val Ser Gly Glu Gly Glu Gly Glu Gln Asn Glu Ile Arg Ile Leu  
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 2625 2630 2635 2640  
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Gln Arg Leu Gly Phe Val Asp Val Gln Asn Cys Met Ser Arg  
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<220>  
 <223> Description of Artificial Sequence:/note =  
 synthetic construct

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<210> 22  
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<211> 2710

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; Note =  
synthetic construct

<400> 23

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Val Asp Asp Arg Cys Val Val Gln Pro Glu Ala Gly Asp Leu Asn Asn
35          40          45
Pro Pro Lys Lys Phe Arg Asp Cys Leu Phe Lys Leu Cys Pro Met Asn
50          55          60
Arg Tyr Ser Ala Gln Lys Gln Phe Trp Lys Ala Ala Lys Pro Gly Ala
65          70          75          80
Asn Ser Thr Thr Asp Ala Val Leu Leu Asn Lys Leu His His Ala Ala
85          90          95
Asp Leu Glu Lys Lys Gln Asn Glu Thr Glu Asn Arg Lys Leu Leu Gly
100         105         110
Thr Val Ile Gln Tyr Gly Asn Val Ile Gln Leu Leu His Leu Lys Ser
115         120         125
Asn Lys Tyr Leu Thr Val Asn Lys Arg Leu Pro Ala Leu Leu Glu Lys
130         135         140
Asn Ala Met Arg Val Thr Leu Asp Glu Ala Gly Asn Glu Gly Ser Trp
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Phe Tyr Ile Gln Pro Phe Tyr Lys Leu Arg Ser Ile Gly Asp Ser Val
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Val Ile Gly Asp Lys Val Val Leu Asn Pro Val Asn Ala Gly Gln Pro
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Leu His Ala Ser Ser His Gln Leu Val Asp Asn Pro Gly Cys Asn Glu
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Val Asn Ser Val Asn Cys Asn Thr Ser Trp Lys Ile Val Leu Phe Met
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Lys Trp Ser Asp Asn Lys Asp Asp Ile Leu Lys Gly Gly Asp Val Val
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Thr Ser Ala Thr Ser Ser Lys Ala Leu Trp Glu Val Glu Val Val Gln
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 Arg Gln Pro Val Phe Val Gln Leu Leu Gln Gly Val Phe Arg Val Tyr  
 1505 1510 1515 1520  
 His Cys Asn Trp Leu Met Pro Ser Gln Lys Ala Ser Val Glu Ser Cys  
 1525 1530 1535  
 Ile Arg Val Leu Ser Asp Val Ala Lys Ser Arg Ala Ile Ala Ile Pro  
 1540 1545 1550  
 Val Asp Leu Asp Ser Gln Val Asn Asn Leu Phe Leu Lys Ser His Asn  
 1555 1560 1565  
 Ile Val Gln Lys Thr Ala Met Asn Trp Arg Leu Ser Ala Arg Asn Ala  
 1570 1575 1580  
 Ala Arg Arg Asp Ser Val Leu Ala Ala Ser Arg Asp Tyr Arg Asn Ile  
 1585 1590 1595 1600  
 Ile Glu Arg Leu Gln Asp Ile Val Ser Ala Leu Glu Asp Arg Leu Arg  
 1605 1610 1615  
 Pro Leu Val Gln Ala Glu Leu Ser Val Leu Val Asp Val Leu His Arg  
 1620 1625 1630  
 Pro Glu Leu Leu Phe Pro Glu Asn Thr Asp Ala Arg Arg Lys Cys Glu  
 1635 1640 1645  
 Ser Gly Gly Phe Ile Cys Lys Leu Ile Lys His Thr Lys Gln Leu Leu  
 1650 1655 1660  
 Glu Glu Asn Glu Glu Lys Leu Cys Ile Lys Val Leu Gln Thr Leu Arg  
 1665 1670 1675 1680  
 Glu Met Met Thr Lys Asp Arg Gly Tyr Ala Glu Lys Gly Glu Ala Leu  
 1685 1690 1695  
 Arg Gln Ile Leu Val Asn Arg Tyr Tyr Gly Asn Ile Arg Pro Ser Gly  
 1700 1705 1710  
 Arg Arg Glu Ser Leu Thr Ser Phe Gly Asn Gly Pro Leu Ser Pro Gly  
 1715 1720 1725

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Gly Pro Ser Lys Pro Gly Gly Gly Gly Gly Gly Pro Gly Ser Gly Ser
1730                      1735                      1740
Thr Ser Arg Gly Glu Met Ser Leu Ala Glu Val Gln Cys His Leu Asp
1745                      1750                      1755                      1760
Lys Glu Gly Ala Ser Asn Leu Val Ile Asp Leu Ile Met Asn Ala Ser
                      1765                      1770                      1775
Ser Asp Arg Val Phe His Glu Ser Ile Leu Leu Ala Ile Ala Leu Leu
                      1780                      1785                      1790
Glu Gly Gly Asn Thr Thr Ile Gln His Ser Phe Phe Cys Arg Leu Thr
                      1795                      1800                      1805
Glu Asp Lys Lys Ser Glu Lys Phe Phe Lys Val Phe Tyr Asp Arg Met
1810                      1815                      1820
Lys Val Ala Gln Gln Glu Ile Lys Ala Thr Val Thr Val Asn Thr Ser
1825                      1830                      1835                      1840
Asp Leu Gly Asn Lys Lys Lys Asp Asp Glu Val Asp Arg Asp Ala Pro
                      1845                      1850                      1855
Ser Arg Lys Lys Ala Lys Glu Pro Thr Thr Gln Ile Thr Glu Glu Val
                      1860                      1865                      1870
Arg Asp Gln Leu Leu Glu Ala Ser Ala Ala Thr Arg Lys Ala Phe Thr
                      1875                      1880                      1885
Thr Phe Arg Arg Glu Ala Asp Pro Asp Asp His Tyr Gln Ser Gly Glu
1890                      1895                      1900
Gly Thr Gln Ala Thr Thr Asp Lys Ala Lys Asp Asp Leu Glu Met Ser
1905                      1910                      1915                      1920
Ala Val Ile Thr Ile Met Gln Pro Ile Leu Arg Phe Leu Gln Leu Leu
                      1925                      1930                      1935
Cys Glu Asn His Asn Arg Asp Leu Gln Asn Phe Leu Arg Cys Gln Asn
                      1940                      1945                      1950
Asn Lys Thr Asn Tyr Asn Leu Val Cys Glu Thr Leu Gln Phe Leu Asp
1955                      1960                      1965
Cys Ile Cys Gly Ser Thr Thr Gly Gly Leu Gly Leu Leu Gly Leu Tyr
1970                      1975                      1980
Ile Asn Glu Lys Asn Val Ala Leu Ile Asn Gln Thr Leu Glu Ser Leu
1985                      1990                      1995                      2000
Thr Glu Tyr Cys Gln Gly Pro Cys His Glu Asn Gln Asn Cys Ile Ala
                      2005                      2010                      2015
Thr His Glu Ser Asn Gly Ile Asp Ile Ile Thr Ala Leu Ile Leu Asn
                      2020                      2025                      2030
Asp Ile Asn Pro Leu Gly Lys Lys Arg Met Asp Leu Val Leu Glu Leu
2035                      2040                      2045
Lys Asn Asn Ala Ser Lys Leu Leu Leu Ala Ile Met Glu Ser Arg His
2050                      2055                      2060
Asp Ser Glu Asn Ala Glu Arg Ile Leu Tyr Asn Met Arg Pro Lys Glu
2065                      2070                      2075                      2080
Leu Val Glu Val Ile Lys Lys Ala Tyr Met Gln Gly Glu Val Glu Phe
                      2085                      2090                      2095
Glu Asp Gly Glu Asn Gly Glu Asp Gly Ala Ala Ser Pro Arg Asn Val
2100                      2105                      2110
Gly His Asn Ile Tyr Ile Leu Ala His Gln Leu Ala Arg His Asn Lys
2115                      2120                      2125
Glu Leu Gln Thr Met Leu Lys Pro Gly Gly Gln Val Asp Gly Asp Glu
2130                      2135                      2140
Ala Leu Glu Phe Tyr Ala Lys His Thr Ala Gln Ile Glu Ile Val Arg
2145                      2150                      2155                      2160
Leu Asp Arg Thr Met Glu Gln Ile Val Phe Pro Val Pro Ser Ile Cys
                      2165                      2170                      2175
Glu Phe Leu Thr Lys Glu Ser Lys Leu Arg Ile Tyr Tyr Thr Thr Glu
2180                      2185                      2190
Arg Asp Glu Gln Gly Ser Lys Ile Asn Asp Phe Phe Leu Arg Ser Glu
2195                      2200                      2205

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Asp Leu Phe Asn Glu Met Asn Trp Gln Lys Lys Leu Arg Ala Gln Pro  
 2210 2215 2220  
 Val Leu Tyr Trp Cys Ala Arg Asn Met Ser Phe Trp Ser Ser Ile Ser  
 2225 2230 2235 2240  
 Phe Asn Leu Ala Val Leu Met Asn Leu Leu Val Ala Phe Phe Tyr Pro  
 2245 2250 2255  
 Phe Lys Gly Val Arg Gly Gly Thr Leu Glu Pro His Trp Ser Gly Leu  
 2260 2265 2270  
 Leu Trp Thr Ala Met Leu Ile Ser Leu Ala Ile Val Ile Ala Leu Pro  
 2275 2280 2285  
 Lys Pro His Gly Ile Arg Ala Leu Ile Ala Ser Thr Ile Leu Arg Leu  
 2290 2295 2300  
 Ile Phe Ser Val Gly Leu Gln Pro Thr Leu Phe Leu Leu Gly Ala Phe  
 2305 2310 2315 2320  
 Asn Val Cys Asn Lys Ile Ile Phe Leu Met Ser Phe Val Gly Asn Cys  
 2325 2330 2335  
 Gly Thr Phe Thr Arg Gly Tyr Arg Ala Met Val Leu Asp Val Glu Phe  
 2340 2345 2350  
 Leu Tyr His Leu Leu Tyr Leu Leu Ile Cys Ala Met Gly Leu Phe Val  
 2355 2360 2365  
 His Glu Phe Phe Tyr Ser Leu Leu Leu Phe Asp Leu Val Tyr Arg Glu  
 2370 2375 2380  
 Glu Thr Leu Leu Asn Val Ile Lys Ser Val Thr Arg Asn Gly Arg Pro  
 2385 2390 2395 2400  
 Ile Ile Leu Thr Ala Ala Leu Ala Leu Ile Leu Val Tyr Leu Phe Ser  
 2405 2410 2415  
 Ile Val Gly Tyr Leu Phe Phe Lys Asp Asp Phe Ile Leu Glu Val Asp  
 2420 2425 2430  
 Arg Leu Pro Asn Glu Thr Ala Gly Pro Glu Thr Gly Glu Ser Leu Ala  
 2435 2440 2445  
 Asn Asp Phe Leu Tyr Ser Asp Val Cys Arg Val Glu Thr Gly Glu Asn  
 2450 2455 2460  
 Cys Thr Ser Pro Ala Pro Lys Glu Glu Leu Leu Pro Val Glu Glu Thr  
 2465 2470 2475 2480  
 Glu Gln Asp Lys Glu His Thr Cys Glu Thr Leu Leu Met Cys Ile Val  
 2485 2490 2495  
 Thr Val Leu Ser His Gly Leu Arg Ser Gly Gly Gly Val Gly Asp Val  
 2500 2505 2510  
 Leu Arg Lys Pro Ser Lys Glu Glu Pro Leu Phe Ala Ala Arg Val Ile  
 2515 2520 2525  
 Tyr Asp Leu Leu Phe Phe Phe Met Val Ile Ile Ile Val Leu Asn Leu  
 2530 2535 2540  
 Ile Phe Gly Val Ile Ile Asp Thr Phe Ala Asp Leu Arg Ser Glu Lys  
 2545 2550 2555 2560  
 Gln Lys Lys Glu Glu Ile Leu Lys Thr Thr Cys Phe Ile Cys Gly Leu  
 2565 2570 2575  
 Glu Arg Asp Lys Phe Asp Asn Lys Thr Val Thr Phe Glu Glu His Ile  
 2580 2585 2590  
 Lys Glu Glu His Asn Met Trp His Tyr Leu Cys Phe Ile Val Leu Val  
 2595 2600 2605  
 Lys Val Lys Asp Ser Thr Glu Tyr Thr Gly Pro Glu Ser Tyr Val Ala  
 2610 2615 2620  
 Glu Met Ile Arg Glu Arg Asn Leu Asp Trp Phe Pro Arg Met Arg Ala  
 2625 2630 2635 2640  
 Met Ser Leu Val Ser Ser Asp Ser Glu Gly Glu Gln Asn Glu Leu Arg  
 2645 2650 2655  
 Asn Leu Gln Glu Lys Leu Glu Ser Thr Met Lys Leu Val Thr Asn Leu  
 2660 2665 2670  
 Ser Gly Gln Leu Ser Glu Leu Lys Asp Gln Met Thr Glu Gln Arg Lys  
 2675 2680 2685

Gln Lys Gln Arg Ile Gly Leu Leu Gly His Pro Pro His Met Asn Val  
2690 2695 2700  
Asn Pro Gln Gln Pro Ala  
2705 2710

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<212> PRT  
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<220>  
<223> Description of Artificial Sequence; note =  
synthetic construct

<220>  
<221> VARIANT  
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<400> 24  
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1 5

<210> 25  
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<220>  
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synthetic construct

<400> 25  
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<210> 26  
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<220>  
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<400> 26  
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<210> 27  
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<220>  
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<210> 28  
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 <212> PRT  
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<220>  
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<400> 28  
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<210> 29  
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<210> 30  
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<220>  
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 synthetic construct

<400> 30  
 Arg Arg Asp Ala  
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<210> 31  
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 <212> PRT  
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<400> 31  
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 1 5 10 15  
 Leu Pro Gln Pro Pro Glu Ala Glu Asn Ser Thr Glu Glu Leu Glu Pro  
 20 25 30  
 Ser Pro Pro Leu Arg Gln Leu Glu Asp His Lys Arg Gly Glu Ala Leu  
 35 40 45

<210> 32  
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<400> 32

Gly Tyr Gly Glu Lys Gly Glu Ala Leu  
1 5